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- Revealed

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The 3D holodecks, original Na'vi ZBrush sculpts and rendering pipeline technology

- Vue tutorial

REALISTIC SNOW

Create a frosty landscape scene using atmospherics

- Maya tutorial

PAINT ON 3D

Learn to paint a futuristic city over a basic 3D model

Inside this issue

Classic portrait in 3ds Max
Wireframe renders in Maya
Transparency maps in Poser
Mastering eyes in CINEMA 4D

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inside

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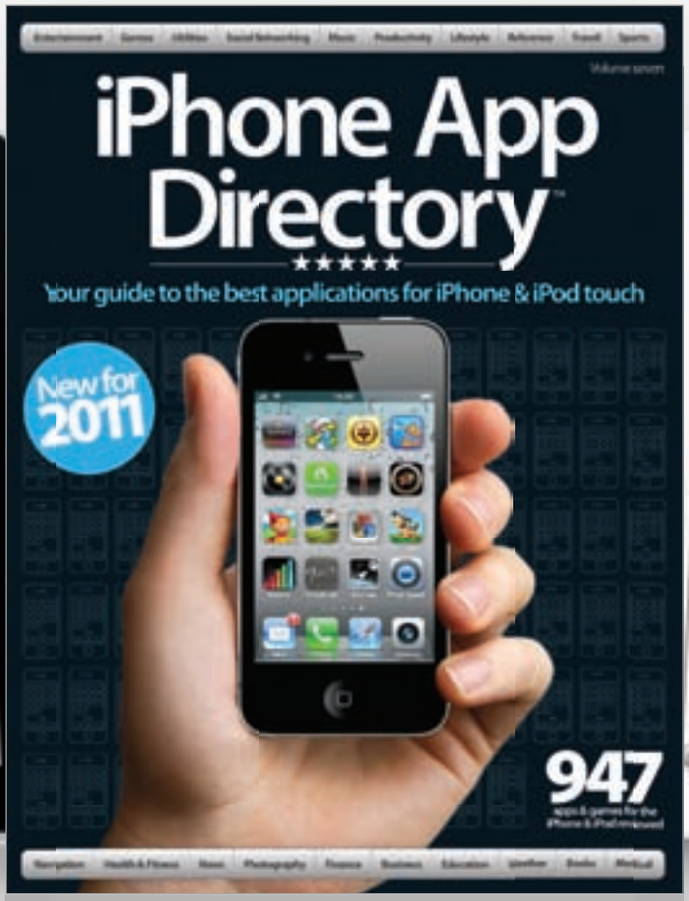

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Artist info

Yann Souetre

Personal portfolio site
www.yann-souetre.com/3d2/index.html

Country France

Software used
3ds Max and Photoshop

Cover artist

A massively detailed spaceship sails through the cosmos, with a fleet of little fighters zipping around in protective formation. Classic sci-fi imagery, superbly realised by Yann.

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Welcome

to the magazine and 116 pages of amazing 3D

Every issue you can count on...

1. **116 pages of creative inspiration**
2. Behind-the-scenes guides to images and artwork
3. **A CD packed full of creative goodness**
4. Interviews with inspirational artists
5. **Tips for studying 3D or getting work in the industry**
6. The chance to see your art in the mag!

Love it or hate it, and most people have loved it, there's no denying that the box-office draw over Christmas was *Avatar*. In our feature article this issue, we have a look at some of the technology behind James Cameron's 3D blockbuster, including an interview with the guy who did the original Na'vi sculpts. The question you have to ask is whether overwhelming technical brilliance is enough when the plot and story are so familiar – *Dances with Wolves*, *The Last Samurai*, even *Pocahontas* will make *Avatar* seem like an old friend with a shiny new suit. With takings of over $1 billion, this is an event movie that demands discussion.

Duncan Evans, Editor

This issue's team of expert artists...

Marco Bauriedel

Hold the textures in this 3ds Max tutorial, where Marco shows how to create pastel-flavoured colours in a Paris street scene

Christian Darkin

Working the 3D reviews section, Christian had plenty of rendering to do with the launch of Shaderlight

Paul Francis

Paul is our Poser expert and tackles the subject of using Transparency maps for modelling your Poser figures

Lance Hitchings

Lance runs a design studio in the States, and also comes up with solutions for all your general Maya-related problems

Dominic Davison

Our resident Vue expert creates images that mortals can only dream of. Dom is here to reveal all about Vue

Daniel Lovas

The guy with CINEMA 4D in his DNA is busy this issue with the splashy problem of creating realistic sea

April Madden

April is deputy editor on **Digital Artist** magazine and a graphic artist. This issue, she's painting over models

Joe Harford

Welcome aboard Joe Harford as our resident Masterclass expert. This issue, Joe explains how to create realistic eyes

Rosie Tanner

Bringing you all the courses and galleries from the universities, it's our Rosie, the editor of **Photoshop Creative** magazine

Ryan Knope

When he isn't busy in his architectural design studio, Ryan is available to answer questions on 3ds Max and arch-vis

Ali Jalali

If you want a Persian-style image that borders on painterly illustration, then look no further than Ali's tutorial

Mark Bremmer

Deep inside the MAXON vault, Mark Bremmer reveals the top-secret projects and images powered by CINEMA 4D

Sign up, share your art and chat to other artists at www.3dartistonline.com

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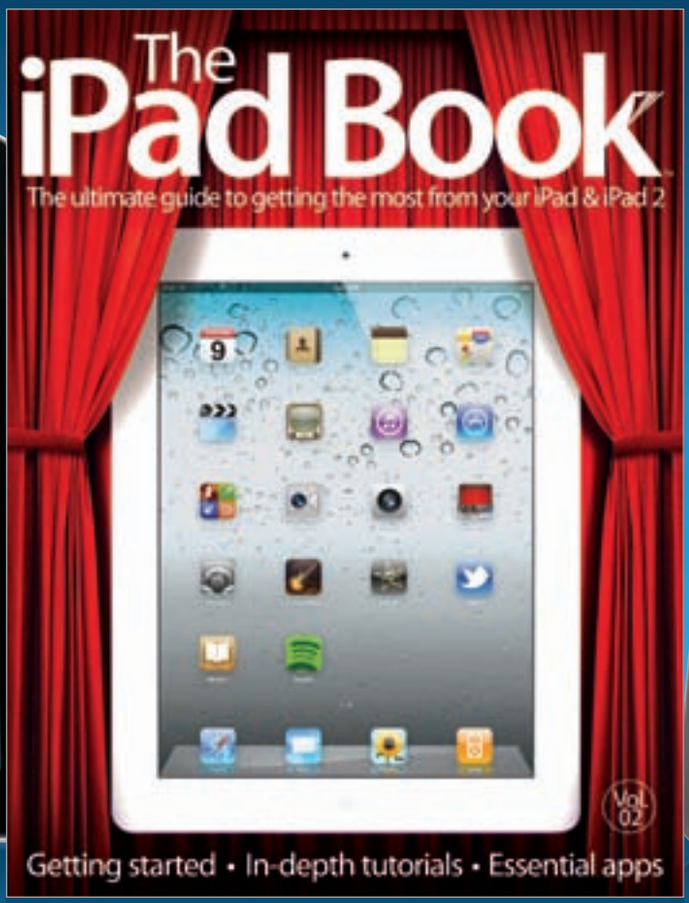
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INSIDE ISSUE TWELVE

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Design an illustrative render

"I wanted to illustrate the beauty of a Persian girl through miniature art"

Four-page behind-the-scenes walkthrough

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“The layer stack is positioned into the painting and the Occlusion is set to Multiply on top of the geometry”

Marco Bauriedel on painting over Maya geometry. **Page 52**

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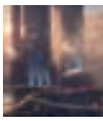

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68 Step by step: *Rue de Paris*
Hold the textures for this pastel-coloured rendition of a fashionable girl shopping in Paris

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Take a basic 3D portrait render and turn it into a painted image

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There's even more inside...

Turn the page to discover the interviews, reviews, industry advice and more that we've packed into this issue...

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All the lovely images from the world of 3D that we could find

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Wander along to see the range of goodies on the special DVD issue

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"The issues we needed to solve weren't as much about rendering as they were about high-performance computing"

Sebastian Sylwan, head of Research, Weta Digital**. Page 40**

workspace 3D

Inside guide to industry news, studios, expert opinion & education

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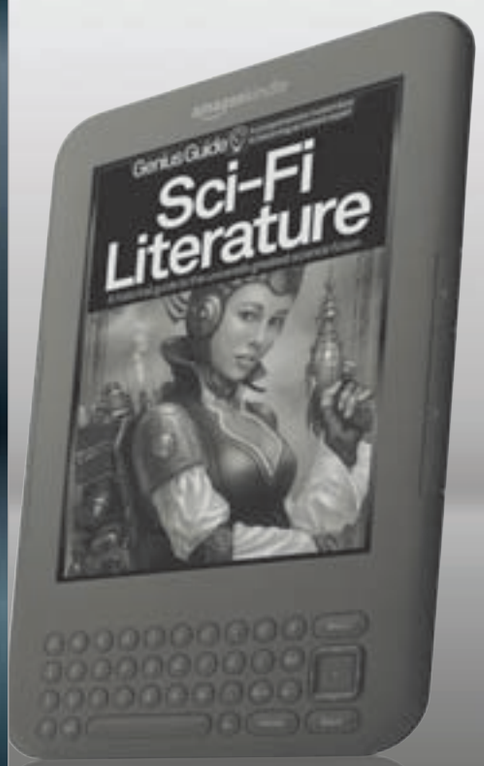

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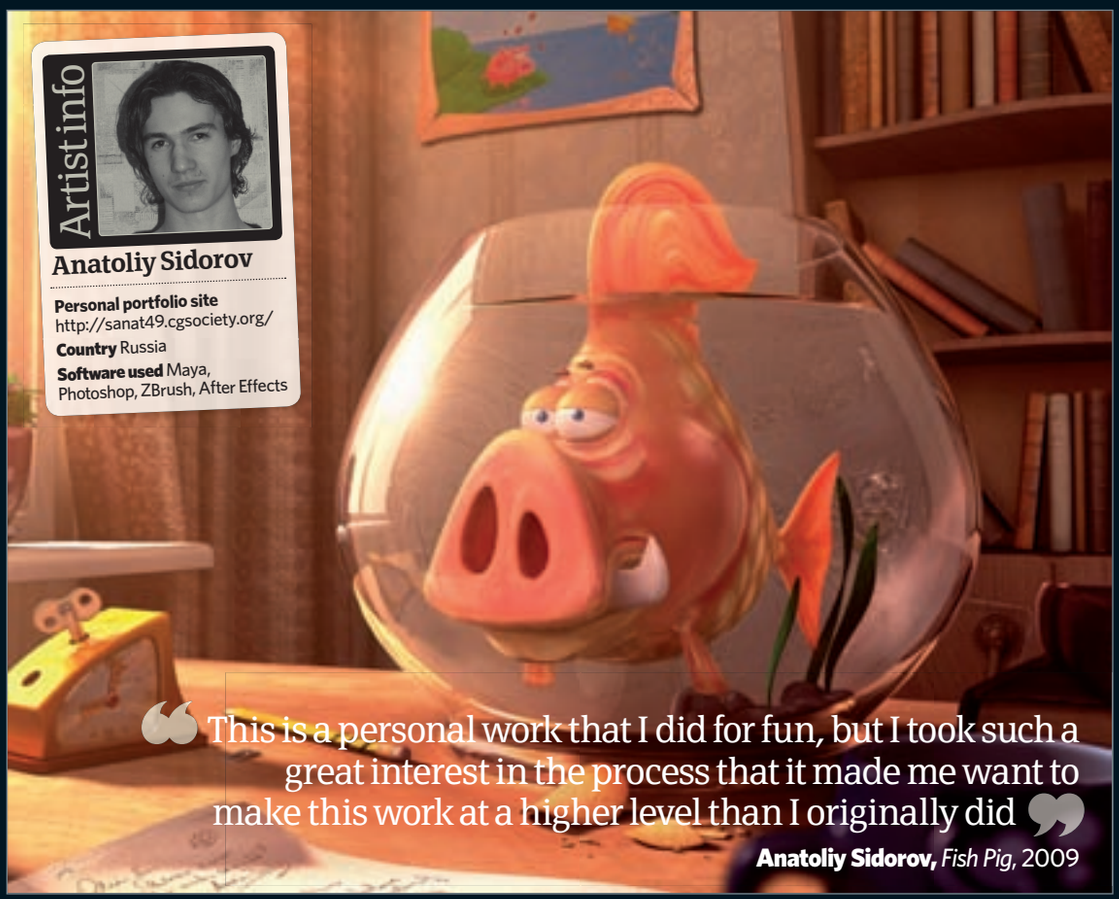
Nine pages of great artwork from the 3D community

Images we love!


Artist info
Anatoliy Sidorov
Personal portfolio site
http://sanat49.cgsociety.org/
Country Russia
Software used Maya, Photoshop, ZBrush, After Effects
This is a personal work that I did for fun, but I took such a great interest in the process that it made me want to make this work at a higher level than I originally did
Anatoliy Sidorov, Fish Pig, 2009

Featured artists

Anatoliy Sidorov

It's a bizarre fish in a very small bowl. Very creative and fun

Angel Nieves

More fish-based frolics but with a darker edge. Who is eating who?

Finn Meinert Matthiesen

A magical room full of interesting objects

Henno Drop

Outstanding modelling, textures and colours

Jiri Adamec

Incredible feathers and lovely skin textures

Kiadaw Phua

Sexy girls in Shakespeare's town, Stratford-upon-Avon

Yann Souetre

Giant spaceships roam the dark galaxy - superb detailling

Hatem Helmy

The best piece of architecture we've seen this montth

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3. Tell us about them!

Have an image you feel passionate about? Drop editorial an email at **duncan.evans@imagine-publishing.co.uk**.

Email or post

You'll be missing out on a thriving 3D community, but if you'd rather submit your work by email or post, here's how. Make sure your image is at least 3,000 pixels on the longest side, save it as a maximum quality JPEG or zip it up as a TIFF and email it to the address below. Please include your contact details! If you've created a Pixar-beating animation and want to see that featured on the cover CD, then save it onto a CD and post it to us. You can also send your images on CD. The addresses are:

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Comment on more great 3D art...

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Create your gallery today: www.3dartistonline.com

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> We have all seen the old pier with the crazy fisherman telling wild stories in movies and on TV; what if the stories weren't made up? This image explores what might have happened in one of Old Man Jenkins' fantastic stories

Angel Nieves, *A Fisherman's Story*, 2009

Artist info

Angel Nieves

3DArtistonline.com

Username angel

Personal portfolio site http://vertexangel.com/

Country USA

Software used Maya, ZBrush, Photoshop

Work in progress...

The team Loves

> There is a great concept behind this image, while the composition directs the viewer's eyes very well

Jo Editor in Chief

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Artist info

Henno Drop

3DArtistonline.com
Username hdrop

Personal portfolio site
http://hdrop.cgsociety.org/
Country The Netherlands
Software used CINEMA 4D, ZBrush, Photoshop

Work in progress...

"My goal was to create an image of history's most infamous seductress. Salome was a favourite subject among artists from the second half of the 19th Century. The theatrical pose, colour palette and composition of the image are intended to evoke the atmosphere of paintings from that time in history"

Henno Drop, *Salome*, 2009

The team Loves

"This image draws you in with its vivid, beautiful colours and wonderful detail in the fabrics, but the tone changes dramatically when you see the severed head!"

Duncan Editor

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Study Chamber of the Archmage is my debut render. The image is strongly influenced by gaming art, because I created lots of environments for videogame models in the past. It shows a classical fantasy chamber, which seems to be always untidy and full of magic stuff the sorcerer needs to create his new spell potions and magic scrolls. The archmage is, of course, a very eccentric person who needs such a chaotic place to inspire his genius mind. Even the king himself gave up ordering the sorcerer to clean up his room

Finn Meinert Matthiesen,
Study Chamber of the Archmage, 2009

Artist info

Finn Meinert Matthiesen

Personal portfolio site http://madmaximus.cgsociety.org/

Country Germany

Software used 3ds Max 2009, V-Ray 1.5 SP2, Photoshop CS3

Work in progress...

The team Loves

An impressive debut render from Finn. The level of detail in this composition is outstanding

Luke Senior Designer

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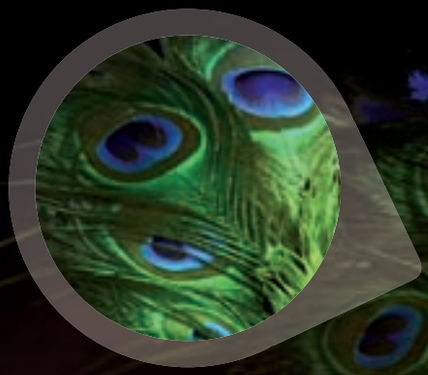

The team Loves

"Feathers are among the hardest objects to model in 3D, but Jiri has got the plumage spot-on on the headdress and bodice here"

Jo Editor in Chief

"I am a character modeller and freelance 3D artist from the Czech Republic. This image, *Peacock Woman*, was entirely created with 3ds Max, from the modelling of the face and body to the creation of the peacock feathers"

Jiri Adamec, *Peacock Woman*, 2009

Artist info

Jiri Adamec

Personal portfolio site www.a-stil.cz

Country Czech Republic

Software used 3ds Max 2009, Photoshop CS3

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This image is inspired by my wonderful time in England: the beautiful landscape, historical places and, of course, the beautiful girls and their clothes. The backdrop I chose was Stratford-upon-Avon, a historical city in central England that's best known as the birthplace of William Shakespeare. Many people have commented that I should have used London as the background as it's more recognisable, but in this piece I wanted to show that there are many other beautiful places that are uniquely 'British' than just the capital city

Kiadaw Phua, *An autumn day at Stratford-upon-Avon,* 2009

Artist info

Kiadaw Phua

3DArtistonline.com

Username PKD

Personal portfolio site http://pkd.cgsociety.org/gallery/

Country Singapore

Software used Maya 2009, mental ray, Photoshop CS2, ZBrush R3.1

Work in progress...

The team Loves

The clash of two cultures makes for an interesting composition. The clothing textures are particularly impressive

Luke Senior Designer

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“This shows a huge ship exploring deep space. Inspired by the Cygnus ship of *The Black Hole* (1979) and the picture *Galactic Empire* by Paul Alexander with a similar perspective and background, but without the little starfighters in order to have a more quiet and mysterious mood”

Yann Souetre, *Deep space,* 2009

Artist info

Yann Souetre

Personal portfolio site www.yann-souetre.com/3d2/index.html

Country France

Software used 3ds Max and Photoshop

Work in progress...

The team Loves

“A huge amount of detail is essential when creating an accurate spacecraft, and that's exactly what we've got here in Yann's image. Excellent!”

Duncan Editor

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The team Loves

“Intricate carvings and plush furniture, with plenty of attention paid to the lighting, this could almost be a photo”

Jo Editor in Chief

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“When I first started this shot, I wanted to remove myself a bit from my usual render routine. I wasn't too busy so I spent a lot of time on it. I wanted to give it a homy and cosy feeling but still well lit so the client can see the details. I think it turned out well”

Hatem Helmy, *Classic interior,* 2009

Artist info

Hatem Helmy

Email address freeze_studio@yahoo.com

Country Egypt

Software used 3ds Max and Photoshop

Work in progress...

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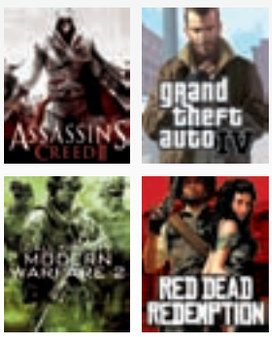

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Creativity on another level

Artists present their latest works at the Kinetica Art Fair

One of the highlights is Revolver, a three-dimensional video display from Vincent Leclerc

What do sculpting and drawing robots, a giant vertical electronic wave, holographic light beings and an orchestral milk float have in common? They're all part of the Kinetica Art Fair 2010, taking place from 4-7 February at the P3 space in London, an underground, former concrete-testing facility opposite Madame Tussauds.

Among the artists exhibiting at the event are Squidsoup, whose piece titled *Ocean of Light* explores the creative and immersive possibilities of using light-based visuals in physical 3D space. Also exhibiting is Rosaline de Thélin, who has created a family of holographic light beings inspired by astronomy and quantum physics.

Commenting on the event, Dianne Harris, art director and curator for the Kinetica Museum, said: "We are bringing together work from some of the world's greatest kinetic artists and exhibits first shown at the seminal Cybernetic Serendipity show from the ICA in 1968. These pieces shown alongside contemporary kinetic, electronic and new-media works create an art of universal knowledge pushing the boundaries of many disciplines across the arts and sciences."

Tickets are priced £8 for the Art Fair, with a limited number of tickets for the opening performance spectacular at £20 per person. Visit www.kinetica-artfair.com for more information and to purchase your tickets.

> "We are bringing together work from some of the world's greatest kinetic artists" **Dianne Harris** – Art director and curator

3DArtist online.com

Did you attend the Kinetica Art Fair 2010? Discuss this and more with other 3D artists at **www.3dartistonline.com/forum**

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3D web update

New sites and changes to your favourites – it's all here!

Videos galore

3D-Palace has recently seen a redesign of its website. Now reflecting its forum roots, when a visitor heads over to the website they are presented with recent threads, news and links to watch the extensive video tutorials available on the site. The site is also located on a new server, giving faster download speeds and quicker page rendering.

Most videos are free, and there are hundreds to choose from – 286 videos on 3ds Max alone. The videos are also incredibly lengthy, some stretching over several hours, and sponsors of the site have access to even more video tuition.

To sign up for a free account, visit www.3d-palace.com.

Animators welcome

A new website has been launched that aims to engage animators with up-to-the-minute news, tips and stories in podcast form.

Created by Stephen Melagrano, Adam Strick, Jacob Gardner and Ben Willis – all professional animators who are working in the industry – Speaking of Animation is an entertaining and lively podcast, filled with lively banter.

The podcasts are accessible through either iTunes or the Speaking website. The first posted on 10 December includes an interview with Ted Ty, animator on *Lilo & Stitch*, *Madagascar*, *Kung Fu Panda* and more. Head over to www.speakingofanimation.com to listen.

An image packed with detail

Masterpiece Steampunk action

Cinema, television, comics and books – you name it, it's been an inspiration to Dennis Allain

Dennis Allain www.dennisallain.com

A huge comic and science fiction fan, Dennis Allain spent many of his early years drawing scenes and creatures from TV.

"Me and the other kids in the neighbourhood would often sit in on cold, rainy Saturdays (for New England, that can happen quite often) watching a programme called *Creature Double Feature*." In 1999 he was introduced to 3D art, and has yet to look back.

This image, titled *The Devil's Cauldron of the Hoodoo Sea*, was created for a steampunk competition at CGSociety. Allain successfully mixed a *War of the Worlds* concept with steam engines and ocean water.

Awards aplenty

Annie Awards nominees announced

The 37th Annual Annie Nominations have been confirmed, with a whole raft of nominees in more than 20 categories. Competing against each other for the Best Animated Feature award are *Up*, *Cloudy With a Chance of Meatballs*, *Coraline*, *Fantastic Mr Fox*, *The Princess and the Frog* and *The Secret of Kells*. Other categories include Best Animated Television Commercial and Best Animated Short.

Individuals are also recognised for their talents and contributions to animation, both 3D and 2D. Notable artists include Eric Froemling for his effects work on *Up* and Tony Smeed, character animator on *Prep & Landing*.

The winners will be announced Saturday 26 February at UCLA's Royce Hall in Los Angeles, California.

Get published!

EXPOSÉ 8 call for entries!

Ballistic Publishing is searching once again for the world's best digital art for its upcoming book, *EXPOSÉ 8*. You better get your skates on, however, as the deadline is midnight GMT, 22 February. Images can be either 2D or 3D, and created for either commercial or personal purposes. If you've recently created a masterpiece image worthy of worldwide publication, then there's no reason not to enter.

EXPOSÉ 8 goes on sale June 2010. If your work is published, you'll receive a complementary copy of the book and will enjoy some fantastic exposure.

Entering is free, simply visit www.ballisticpublishing.com/bsw.

Website of the month

The latest visual effects revealed www.vfxworld.com

Interested in discovering the secrets behind the visual effects in the latest movies and TV shows? If so, you'll love VFXWorld. The site is updated weekly with in-depth articles on how the special effects in movies such as *2012* and *Avatar* are created, with animated GIF images that reveal step by step how the shots were composited.

VFX artists, producers and supervisors chime in, giving the site a stamp of authority. Best of all, the articles reveal the visual effects secrets of movies that are still showing at the box office, meaning you don't have to wait for those bonus DVD releases.

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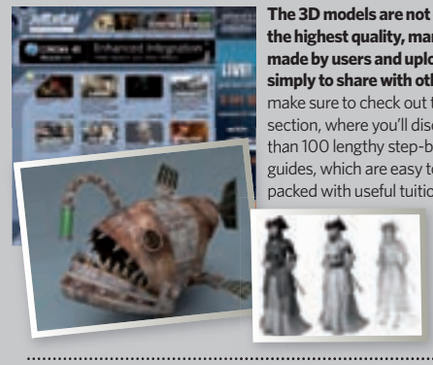
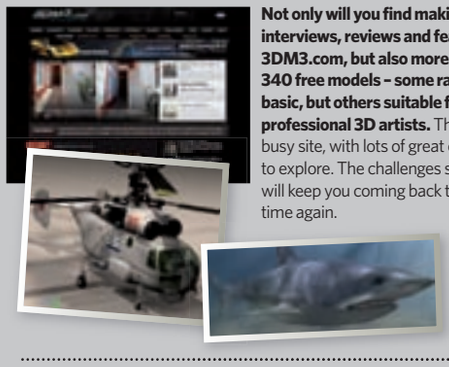
Models, textures, tutorials and a vibrant community. There's plenty to keep you busy at 3D Total
Web: www.3dtotal.com



The 3D models are not exactly of the highest quality, many being made by users and uploaded simply to share with others. But make sure to check out the tutorials section, where you'll discover more than 100 lengthy step-by-step guides, which are easy to follow and packed with useful tuition.

3DM3

A growing website, with plenty of professional -looking resources
Web: www.3dm3.com



Not only will you find making-ofs, interviews, reviews and features at 3DM3.com, but also more then 340 free models – some rather basic, but others suitable for even professional 3D artists. This is a busy site, with lots of great content to explore. The challenges section will keep you coming back time and time again.

morgueFILE

Free textures, stock photos and more – you'll find a massive selection of imagery to choose from
Web: www.morguefile.com

When it comes to free textures and images, you'll be hard pressed to find a better resource than morgueFILE. There are tens of thousands of images, each uploaded by photographers and artists. You're free to use them for either commercial or personal purposes; just remember to let the author know that their image is being used.

Nominations for the VFX Oscar

The Academy of Motion Picture Arts and Sciences narrows the choice down

After a year of VFX-heavy movies, competition for nomination for the VFX Oscar is hotting up. The Academy of Motion Picture Arts and Sciences has announced that just seven films are left in contention for a nomination for the Visual Effects category at the 82nd Academy Awards. The members will watch 15-minute excerpts from each film before narrowing it down to the three nominations. The nominations are announced on 2 Feb, while the winners award ceremony takes place on 7 March. The films are *Avatar, District 9, Harry Potter and the Half-Blood Prince, Star Trek, Terminator Salvation, Transformers: Revenge of the Fallen* and *2012*.

work in progress

Nihal

We caught up with Ivan Stalio to discover how his latest piece of 3D art was brought to life using modo and Photoshop...

Ivan Stalio www.ivanstalio.com

Ivan Stalio took the inspiration for his latest piece from a literary character. "I was inspired by the protagonist of the Licia Troisi's novels, Nihal from the *Land of the Wind* – a young half-elf female warrior," he explained. "I used a lot of modo's sculpting tools directly onto the mesh, which made the modelling process quite fast."

Stalio has been creating 3D art for more than three years, but still finds Photoshop useful for last-minute touches. "For the final rendering, I rendered Nihal in four positions and then I put it all in Photoshop. The background was nothing but a maximised piece of the breastplate."

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Artist spotlight

Modelling supremo

15 years' 3D modelling experience and the founder of Redhouse Graphics – it's all part of the day job for this artist

Jack Tomalin www.redhousegraphics.co.uk

After nine years of creating 3D art, Jack Tomalin decided to go professional. He co-founded Redhouse Graphics, a supplier of 3D models sold through DAZ 3D; since then, he hasn't looked back.

Tomalin finds inspiration from a number of sources, as he says: "Ron Thornton is the reason I got into 3D – I loved the work he did on *Babylon 5*." Working in LightWave and Photoshop, Tomalin continues to challenge himself by experimenting with other programs, such as ZBrush. "It's an amazing application, and I just wish I had the skill to get the most out of it." You can find Tomalin's models at DAZ 3D under the name Redhouse Studios.

Software shorts

Get the lowdown on updates and launches

Vast improvements to ZBrush

A free upgrade to ZBrush brings with it a plethora of new features. You'll find various new brushes, a floor grid has been added, improved pen tablet sensitivity and deep shadowing has been introduced to provide a better feel for depth and details when modelling. More information is available from **www.pixologic.com/zbrush/zbrush350r3**.

Luxology gallery on your iPhone

Luxology has announced its first iPhone app, enabling users to easily view and search for CG images found within the company's Customer Gallery. The app provides the ability to search for images by keyword, or browse by category type. The app is available for free from the iTunes App Store. Simply search for LuxGallery.

Tools of the trade

AKVIS SKETCH 10

Add an artistic touch to your renders

AKVIS Software has released version 10 of its AKVIS Sketch program, a piece of software that converts photos and renders to colour and black-and-white sketches.

Especially suitable for artists looking to render images with a hand-drawn look, AKVIS Sketch 10 includes a new tool, Stroke Direction, which enables the user to draw guiding lines for the hatching. As a result, it's now possible to accurately sketch round objects and follow the curve of objects. Other new additions include additional presets and an improved preview window.

The standalone edition of AKVIS Sketch 10 is priced at $72, with upgrades from version 9 being totally free. Pay **www.akvis.com** a visit to find out more details.

The interface is intuitive to use

3DArtist online.com

Create your gallery, browse the artwork, chat with experts and artists and get tips and techniques at

www.3dartistonline.com

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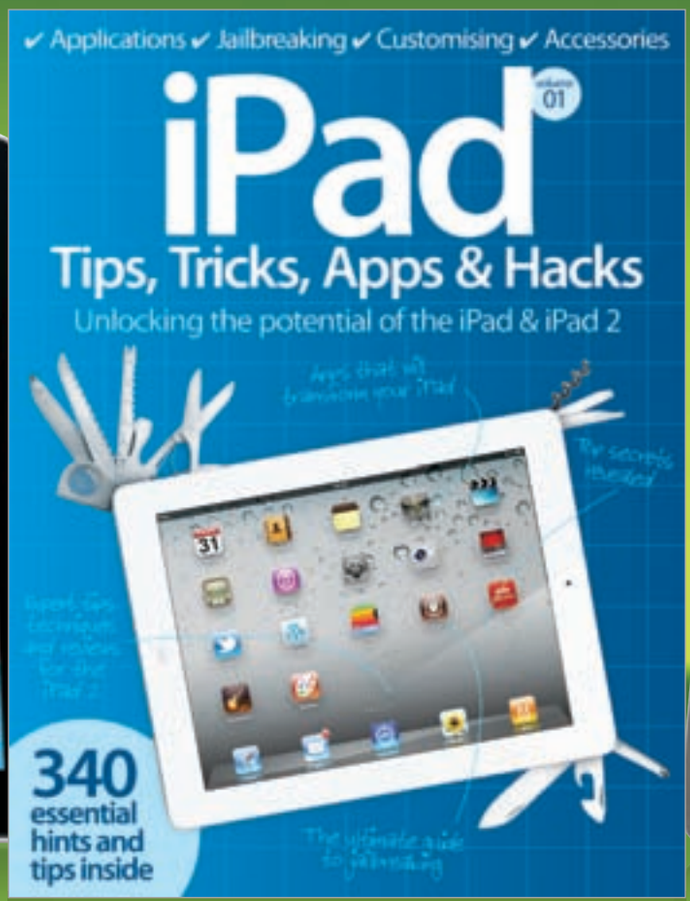
We don't keep secrets

iPhone
Tips, Tricks, Apps & Hacks
The insider's guide to unlocking the potential of the iPhone
340
essential hints and tips inside

iPad



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Which software?

I have enjoyed reading the 3D Artist issue 10 feature entitled Which Software? This was great for me, as I am new to 3D software and it was just what I was looking for to help me choose the right software.

However, I have an Apple Macintosh. As you are aware, the Autodesk software is not available on the Mac, so straight away I am limited. I do have the free Blender software, though.

From the Apple website I downloaded the demo for Cheetah3D version 5. This was not included in your reviews, but I think the user interface is nice. For a novice like me, it is hard to judge if this software is any good for 3D art or not, but it is very reasonably priced so it would have been really good to know if Cheetah3D is good software or not, as well as its advantages or disadvantages.

Another piece of software I have on my Apple Mac is Rhinoceros 3D. Rhino is currently developing a Mac version so it is giving away the software for free at the moment while it is still in development. Rhino is another piece of 3D software that was not included in your review, and it would be good to know what the experts think about these two pieces of 3D software.

Craig Robbins, Hemel Hempstead, by email

Of course, the feature could have been twice as big, but the idea for it was to cover all the main applications, rather than things currently in development. We are planning a follow-up article after a couple of issues to cover the alternatives, and that will feature more Mac software then. In the meantime, you can always go to the ***www.3dartistonline.com/forum*** *and ask fellow contributors for advice.*

Laguna
Did you like this **3D Artist** tutorial? Think your work could give it a run for its money? Then get in touch!

List the disc

I've purchased your magazine in the past from the newsstands here in the US and enjoyed its articles and tutorials. Since I am in the US, the magazine comes pretty delayed compared to its release date. I check out your website from time to time, and if I may make a suggestion, it would be a tremendous aid if you could list some of the upcoming issue's CD content. That would help me personally to know what resources are coming up and to look forward to.

It would be much appreciated. I often look in the forums, but rarely are any contents or resources listed.

Walt, Austin, Texas, by email

We like the idea Walt, so it will either be listed on the forum or the website from now on when each issue is published.

Time to render

I've really enjoyed reading your magazine and, don't worry, I will continue to do so for the future – it's just one thing bugs me. I've been following your tutorials and I've been looking at your render time information for the final images, thinking 'ten hours, yeah, but on what?' Was it ten hours on a quad-core PC or on a 60-core render farm. You have got to admit that without a system specification, giving us ten hours is just an arbitrary number. I realise that everyone's setup will be different, but getting a benchmark to estimate from would give us a better insight. Thanks for all the great tutorials.

James Stothard, Oxford, by email

Good idea James, we will include that on all tutorials from issue 13. Further proof that we take our readers' suggestions seriously.

Work for the magazine

Just a quick question regarding the submission of tutorials for your 3D Artist magazine. I am a 3D sculptor and digital painter specialising in caricature, and would love to submit something in a future issue. How would I go about doing this?

Nori Tominaga, by email

There are two ways of contributing. One is because you've made a great piece of artwork and we would like a tutorial on how you made it. The best way to get our attention to be commissioned for one of these is to upload images to our gallery at the ***3D Artist*** *website.*

The other way is if you have a specialism in a particular software package. We have two new features – Back to Basics and Masterclass – that cover beginner and advanced topics respectively. If you, or anyone else, would like to contribute articles to either of these sections, please let me know what your specialities are and what you think would work for these sections. If we like the idea then we will commission it. It's as simple as that.

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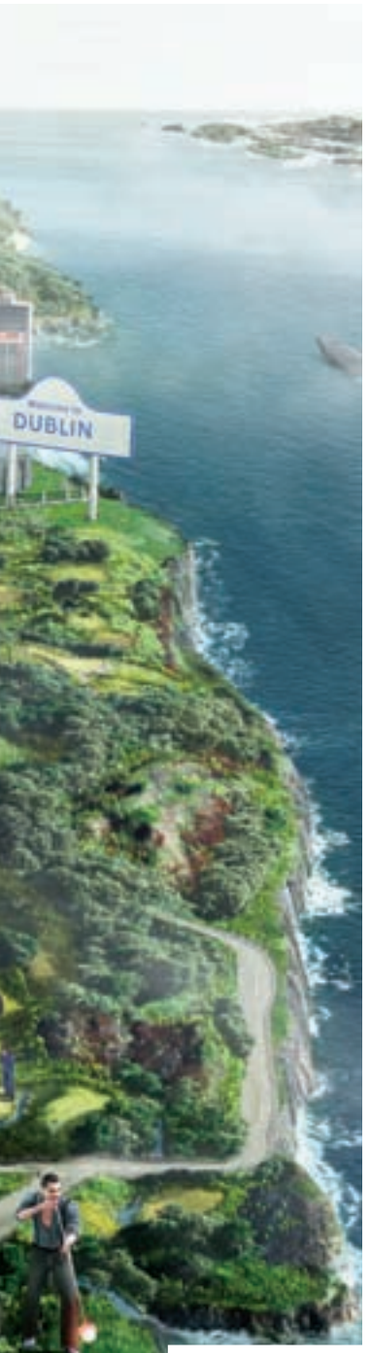


Duncan Evans talks to Glen Taylor, managing director and founder of Taylor James, a world-renowned creative agency based in London

Creating the world

Company Taylor James
Founded 1999
Company website www.taylorjames.com
Country London, UK
Expertise Complete production studio – print, interactive, TV content
Software used 3ds Max, V-Ray, Vue
Client list Young & Rubicam, TBWA, JWT, Digitas, Syzygy, Critical Mass, Red Bee Media, BBDO, Ogilvy, GSW Worldwide, Leo Burnett

> "I moved into the photographic retouching industry at the time when it was in a transition from conventional darkrooms into digital high-end computers"
>
> **Glen Taylor** managing director and founder of Taylor James

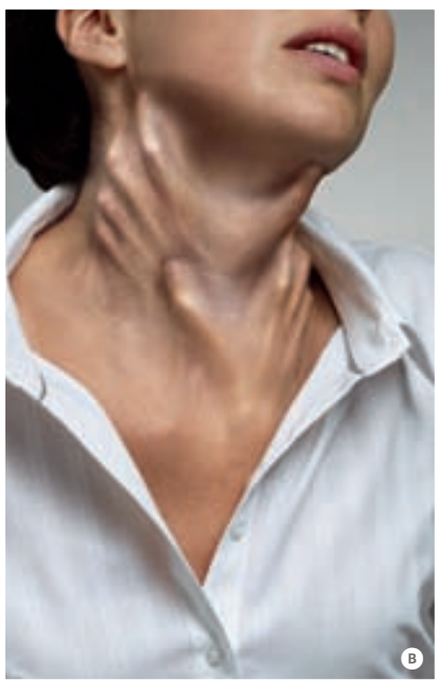
It was ten years ago when Glen Taylor had the idea for creating a company that specialised in photographic retouching for the world's leading advertising photographers. Taylor James was the result, and the London-based creative agency rapidly developed a world-renowned reputation for work across multipart print compositions and being perfectionists in understanding and creating photoreal images. It was around five years ago that the company started working with CGI, finding it a natural transition thanks to an understanding of scale, perspective, lighting and how properties react with each other in the real world. This placed the company perfectly when creating CGI content from scratch. Today, Taylor James works predominantly within the advertising industry, creating content for print, interactive and broadcast/TV productions. The aim of the company is to develop in-house skills across the board, tackling every possible CGI challenge.

3D Artist: *What is your background? Where have you worked before?*
Glen Taylor: My background is very much creative – I studied Graphic Design and postgraduate Advanced Media. I moved into the photographic retouching industry at the time when it was in a transition from conventional darkrooms into digital high-end computers. Within a short space time, I had established my reputation as a good operator and then worked within many of London's leading postproduction houses.

3DA: *What made you decide to set up Taylor James? What's your purpose and goal?*
GT: I set Taylor James up because I believed I could create a company that offered alternative services to the creative industry. Focusing initially on the often challenging task of creating photorealistic imagery, I always had a burning ambition to work for myself and the timing was perfect.

3DA: *How many people work for Taylor James and how would you categorise the areas that the staff work in (sales, designers, artists, etc)?*
GT: In the last couple of months we have expanded dramatically. We are constantly trying to find employees to meet our standards and client work demands. Currently, we employ around 40 people, not including freelance artists or interns.

The generic nature of our work means we need to cover every discipline of CGI, from modelling, animation and VFX to lighting, rendering, compositing and R&D. Several of our staff remains support-based, including sales, HR, IT, marketing and production. We then also have internal creatives and project managers supporting the 2D and 3D departments.



A Tourism Ireland
Agency: JWT London
Client: Tourism Ireland
Production, CGI and creative direction: Taylor James
CGI and retouching: Taylor James

B Kalbitor
Agency: GSW
Client: Dyax Corporation
Production, CGI and creative director: Kevin Fox
Art director: Mark Thompson

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Key Project 1

NetApp

Most recently, we were commissioned again by Young & Rubicam in San Francisco to direct and produce this project for US computer storage company NetApp. The NetApp campaign suited our company's services perfectly. As a 360-degree campaign, spanning multiple print and animation deliverables, our unique blend of CGI, photography and retouching made it easy for us to manage all parts of the job and pass the production efficiencies of this sort of campaign on to the client.

Taylor James conceptualised the overall feel and look of the factory, as well as building the AND and OR units along with the robots and their functions, taking it from a simple flat image and getting it into a position where there are more dynamic angles. Handling the complete production allowed us to have control over the total budget, which meant we were able to organise the shoot and allocate costs more effectively for each aspect of production.

We build our CGI assets so they can be cross-used across print and animation, and arrange our photoshoots so that we can use the same model for live-action and still-image shoots on the same day. It was a really fun project for us, exploring the style and the design of all the machinery, while the sound design – which we were allocated control over – was the icing on the cake. The animation for this can be viewed on our website.

3DA: *We recently ran an article on pitching for work. In general terms, who gets involved at the start of projects when you are pitching for commissions and what's your workflow from that point onwards?*
GT: Each brief is treated individually; production handles all of the estimates and the creatives get involved at the early treatment stage. Pitching can take up a lot of time, which we sometimes don't have, so we have to be selective in deciding which pitch to go for. Our production process is one of our key USPs. We have spent years developing a unique workflow that can be tailored to each client and project. This is an important factor to highlight for us at the initial pitching stages with our clients.

3DA: *Let's talk about some of your projects now. You created huge CGI maps of Ireland, representing a microcosm of the country. What was the brief for this project?*
GT: JWT London commissioned us to create multiple 3D maps for its client Tourism Ireland's latest print campaign. The brief proposed a stylised version of the country with characterised journeys across the regions, highlighting iconic landmarks and tourist attractions. In order to show Ireland's diversity, we created ten maps in total, each with a distinctive mood and feel. All maps had unique content that had to be modelled individually.

3DA: *What were the technical issues and how did you deal with them?*
GT: The scale of the maps proved a challenge. The agency needed each asset to be repurposed alone at A4 for POS and direct marketing. The complete Ireland map as a flattened image was 24,000 x 21,000 pixels (1.8GB in size). To highlight the scale of detail, at 100 per cent on HDTVs you would need to stack 13 x 20 to show full quality. As you could imagine, retouching was a bit of a challenge in order to follow strict layering conventions and ensure sizing still had limits.

3DA: *Cementing further Taylor James's move into the live-action arena, one of your most recent projects was a TV campaign for Bermuda Tourism, which was broadcast in the US. Who commissioned this and how did you get the job?*
GT: We were commissioned by the US-based advertising agency GlobalHue. Having seen the adverts we had created for Tourism Ireland previously, it fitted its initial concepts for Bermuda Tourism, which ran in a similar vein.

3DA: *Was it a tight brief or did it allow for a measure of creativity?*
GT: I developed the script with the agency and had a very clear vision from the start, which luckily the agency loved. It had originally focused on oversized icons to

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> In order to show Ireland's diversity, we created ten maps in total, each with a distinctive mood and feel

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promote activities of the island, but I saw a more compelling message travelling in real-time around this magnificent island. Looking to create a stylised essence of Bermuda with one complete camera move, I wanted to contrast big, sweeping island panoramas with intimate shared moments. The brief was to characterise the recreational attractions and landmarks on the island map. We shot the ad on location in Bermuda, as I was directing the shoot and London-based Flynn Productions produced the on-island live action. Taylor James was commissioned following our innovative development of the given script. The idea was big but I had confidence in our team and knew they were looking for another groundbreaking challenge.

3DA: *The Bermuda Tourism advert combines photoreal CGI with live action. How did you decide to tackle the project in terms of technically putting it together?*
GT: For me as director, it was important to focus on the creativity and the message, not just the technology. We were the production house but used our friends at Flynn Productions to produce the on-island live action.

We placed a great deal of importance on our animatic from the very start of the project. As the commercial was one continuous camera path moving from CG into live action and back out to CGI, the camera positions and the transitions between these worlds were the single most important governing rule for the shoot. The timing of the camera path, the distances travelled, the speeds and the information conveyed in the moves were important to nail down as early as possible. On set, these became invaluable in guiding the whole crew through the specific requirements for the live-action camera movements and speeds.

Working on a very small and isolated island, the shoot was a challenge, which wasn't helped by the bad weather. Most of the crew flew in from New York or London, so we had a group of experienced people on board.

With two thirds of the advert completely created in CGI, it was crucial that the direction of the live-action shots technically matched our CGI requirements. Communication between myself as the director, our steady cam operator, CGI technical director and our director of photography had to be in sync from day one, so when we got back to London, the team could bring the whole thing together.

3DA: *What software did you use and how many people were involved?*
GT: We used 3ds Max, Vue for most of the terrain and then V-Ray. This was a big compositing project that we put together in fusion. The CGI team size fluctuated but we had between eight to twelve operators involved over the eight-week project.

Ⓒ **Kalbitor**
Agency: GSW
Client: Dyax Corporation
Production, CGI and creative director: Kevin Fox
Art director: Mark Thompson

Ⓓ **Bermuda Tourism**
Agency: GlobalHue
Client: Bermuda Tourism
Production: Taylor James
Director: Glen Taylor
Live-action production: Flynn Productions

Ⓔ **Tourism Ireland**
Agency: JWT London
Client: Tourism Ireland
Production, CGI and creative direction: Taylor James
CGI and retouching: Taylor James

Ⓕ **American Express TV**
Agency: Digitas, NY
Complete CGI Production: Taylor James
Art director: Derek Montgomery

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Key Project 2
Motorola City

We were approached by BBDO New York on behalf of Motorola to create a print campaign to promote its communication systems for the US emergency services. The original brief was to create a print image of a perfectly circular city, demonstrating emergency scenarios. We quickly realised that photography was going to be out of the question, as it would be cost-prohibitive and wouldn't allow the detail required to demonstrate its products fully. CGI was the perfect solution to its requirements and would also allow us to repurpose the material and bring the city to life for interactive use, too.

At the pitch stage, our team proposed the idea of using the 3D assets to create an interactive microsite, which would allow users to fly into the city and explore different stories relating to the products within it. BBDO liked the idea and presented it to Motorola, which gave the project the go-ahead. The assets for the site combined CGI with traditional photography to deliver an environment that the client could interact with and fly through to showcase the required services. The cityscape alone in the Motorola scene was about 50 million polygons, and then we had to tackle the different environment the city sat within. The project was a complete success and has so far won 14 different web awards for design and execution, and can still be seen on **www.motorolacity.com**. Despite being a real challenge, this project was a perfect example of how we could utilise central 3D assets to deliver cross-media campaigns.

> "This project clearly highlighted the versatility of CGI production, using assets across print and animation, which helped save time and money"

3DA: *What problems did you encounter making it all look real and how did you solve them?*
GT: Making the ad look as seamless as possible was essential in order to achieve the stylised essence of Bermuda, and initially we misjudged the level of detail required. As everything was bespoke, we were constantly adding more modelling detail. Working in HD, we really needed to capture all of those extra details on the island. Each 3ds Max scene was over 500MB, including over 20,000 objects and landscape vegetation polygon counts into the billions, which could only have been rendered with V-Ray's proxy geometry feature. The full HD production took up nearly four terabytes.

3DA: *Something quite different was involved with a commission from Young & Rubicam San Francisco for Citrix Systems Inc. What was this project all about?*
GT: Citrix is a multinational corporation specialising in virtualisation and remote-access software. The campaign was based around the idea of controlling networks through one system, which provides control, management and speed and training efficiencies. This was a great project, which utilised all of our internal skills in live action, photography, CGI and compositing. We

G Bermuda Tourism
Agency: GlobalHue
Client: Bermuda Tourism
Production: Taylor James
Director: Glen Taylor
Live-action production: Flynn Productions

H Kalbitor
Agency: GSW
Client: Dyax Corporation
Production, CGI and creative director: Kevin Fox
Art director: Mark Thompson

J Citrix Systems Inc.
Client: Citrix Systems Inc.
Production, CGI and creative direction: Taylor James
CGI and retouching: Taylor James

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> Ultimately, we want to continue providing print and animation content for the advertising industries, while continuing to work on challenging projects that push us creatively and technically

I **Nissan Toughness**
Agency: TBWA, London
Client: Nissan
CGI: Taylor James
Photographic consultant: Garry Simpson

handled the complete production from initial creative brief, previs, photography, live action and postproduction to final delivery.

The overall project was made up of 12 separate deliverables: six print and six animations. This project clearly highlighted the versatility of CGI production, using assets across print and animation, which helped save time and money. Tracking the real motion of the live-action hands and integrating these actions with our CGI objects was a real challenge. Additionally, taking on each of the different deliverables – including animals with fur, splashing water, crushed-metal simulation (essentially, a bit of a who's who of what has historically been regarded as difficult to do in CG) – were challenges we relished.

3DA: *Do you have any custom-designed or proprietary tools, or is it all off-the-shelf programs that you use?*
GT: We have a small team that writes custom scripts and tools to constantly improve our workflow. We also develop special tools for specific jobs, mainly using MAXScript and Python within 3ds Max, Maya and RealFlow.

3DA: *Do you find your website is a good showcase and helps bring work in, at least from the point of introducing people to what you do?*
GT: Our current site is out of date and doesn't represent us as a creative production studio. We are currently having the site redesigned. Watch this space!

3DA: *Looking to the future, what kind of projects would you love to get involved with?*
GT: Ultimately, we want to continue providing print and animation content for the advertising industries, while continuing to work on challenging projects that push us creatively and technically. A decade ago we just did print work, but now offer compositing, photography, CGI and live action. We hope to continue doing large projects like Bermuda; we have grown dramatically over the years and are in the middle of recruiting more new members to the team.

Taylor James is currently recruiting! Please email **info@taylorjames.com** for details or visit the site at **www.taylorjames.com**.

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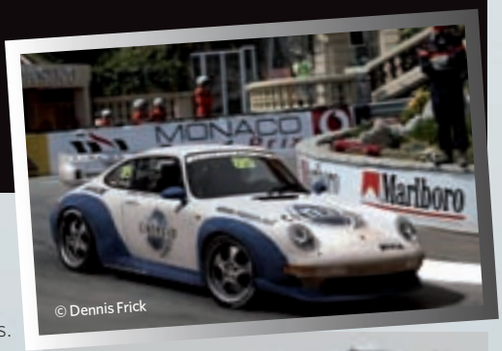
Inside MAXON

Shrewd business decisions and an artist-centric product keeps MAXON's CINEMA 4D tightly integrated in CG studios, reports Mark Bremmer



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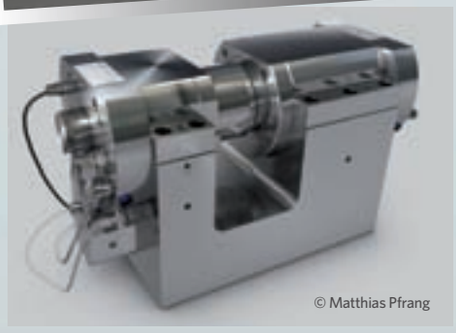
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Following the winds of change, MAXON's CINEMA 4D (C4D) continues to expand, excel and amaze. From the most unlikely of beginnings, MAXON has risen to an esteemed CG position in many cinematic, TV production and artists' studios – the position of being indispensable.

And the most amazing thing is, while C4D has received its share of accolades over the years, for the most part MAXON is a quiet CG player. No massive buyouts or corporate conglomerations, no enormous exhibits at SIGGRAPH. And while even average CG movie fans will recognise names like LightWave, Maya or 3ds Max, CINEMA 4D, on the other hand, can even have some of those in CG circles replying: "I'm familiar with the name but don't know much about it."

Have you seen C4D in action? Absolutely, yes. If your trips to the cinema have included seeing *Spider-Man 3*, *War of the Worlds*, *Beowulf*, *The Polar Express*, *Surrogates* or *Chronicles of Narnia*, then you've seen the handy work of C4D. Do you like sports or watch TV? Most major TV networks in the UK, Europe, USA, mid-East and Japan use CINEMA 4D to create those cool, hypnotic, translucent and shiny CG sports and news animations. How about adverts for BMW, Bosch, Cadbury, Nestlé and Volkswagen? C4D is there, too.

CINEMA 4D timeline

1986
Germany-based MAXON Computer launches *ST-Computer* magazine and *Kickstart*, the leading publications for the Atari and Amiga platforms respectively in Germany, Austria and Switzerland.

1987
MAXON Computer begins publishing software titles for the Atari and Amiga.

1990
Programmers Christian and Philip Losch submit a ray-tracing program to a monthly contest in *Kickstart*. The Losch brothers win and greatly impress MAXON.

1993
CINEMA 4D v1 debuts as a release for the Amiga.

1994
CINEMA 4D V1.5 is released, with improvements to render quality.

1996
CINEMA 4D released for Mac and PC. First multiprocessor version available.

1998
CINEMA 4D debuts in North America at Macworld. CINEMA 4D wins Best Product at SIGGRAPH, receives a Dig-it rating from *Digital Studio* magazine and an Awesome rating from *MacAddict*.

2000
BodyPaint 3D released (MAXON's 3D texture and painting application).

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» Asimov
MAXON's CINEMA 4D is a proven CG chameleon, jumping nimbly from photorealistic animations and stills to cinematic matte paintings, broadcast and sports animations
© Benedict Campbell (**www.benedict1.com**)

Liam Stacy, managing director, MAXON UK

Liam Stacy has held managerial positions since the age of 19, first at DSG International, then at E.ON Energy before joining MAXON in 2001. Stacy became managing director in 2003, and has been instrumental in growing MAXON's user base to include the BBC, ITV, Sky, Cadbury, Nestlé, Renault F1, *The Sun* and many more. MAXON continues to go from strength to strength, with record turnover and year-on-year growth of 13% achieved in 2008.

» MAXON UK managing director Liam Stacy chills out with Spider-Man – MAXON's software was used to texture the famous costume of the digital double for our hero in *Spider-Man 3*, as well as to create environments in the movie. See **www.maxon.net** for the full story

2001
CINEMA 4D XL Release 7 ships, providing key rendering improvements, including Global Illumination, caustics, Multi-Pass rendering and a breakthrough adaptive anti-aliasing technology.

2002
C4D R8 released with a new modular system, including Advanced Render and PyroCluster.

2003
Sketch and Toon module launched.

2005
HAIR module launched.

2006
MoGraph module introduced. Character animation system switches from bones to a joint-based system, marking a leap in CINEMA 4D's character animation capabilities.

2007
CINEMA 4D is the first 3D tool available as a Universal Binary version for Intel-based Macs.

2008
CINEMA 4D R11 released. Supports 64-bit on the PC and Mac. The Advanced Render module is completely rewritten, providing improved quality and vastly improved GI animation.

2009
CINEMA 4D R11.5 released with bucket rendering, improved multicore performance and support for FBX 2010.0. MoGraph 2 is released with dozens of powerful new features, including MoDynamics.

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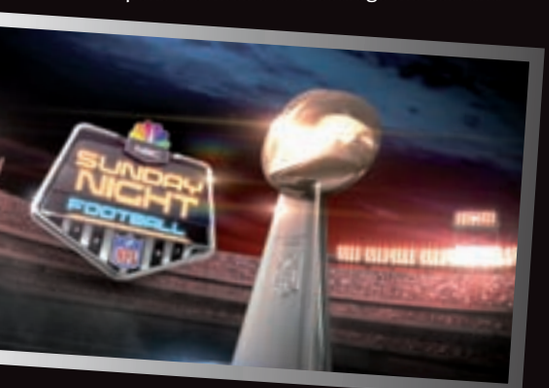
» *Prehistoric Park*
Framestore CFC, the largest visual effects and computer animation studio in Europe, textured dinosaurs for TV visual effects feast *Prehistoric Park* using MAXON's BodyPaint 3D

> "We stay focused on ease of use, stability, speedy workflow and pipeline integration"
>
> **Luke Stacy** – MAXON UK marketing director

THE HISTORY OF MAXON

It's fair to say that MAXON had an unlikely beginning. Its roots from 1986 were not actually in computer software at all, in but magazine publishing. Begun as a set of periodicals to follow the exotic subjects of the Atari ST and Amiga computers, MAXON's magazines became an instant success in its home of Germany by filling the void of information that developers and users were clamouring for. The winds of change blow quickly, and the insatiable appetite of the computer geek world – facilitated by the spread of shareware through the magazines – made the MAXON team think: "Hey, why don't we start authoring our own content?"

And so they did. By the end of the Eighties, MAXON had authored over 50 titles and became a solid foundation and resource for the rapidly expanding software market. We all know that magazines on the leading edge of the industry sponsor contests to encourage the best and brightest, and MAXON's *Kickstart* magazine for the Amiga platform was no different. During one such contest for *Kickstart*, a family team by the names of Christian and Philip Losch submitted a ray-tracing program that both won and equally impressed the MAXON team. The mental wheels began turning and churning. Words and ideas were exchanged.



Germination happened. After a two-year development path, MAXON released CINEMA 4D v1 in December 1993, followed quickly with an upgrade to v1.5 that improved rendering in May 1994. The magic of 3D modelling and rendering became accessible in a reasonably friendly fashion, and the recognition, awards and expectations blossomed.

MAXON has long had a reputation of looking forward to the future. MAXON's current UK marketing director, Luke Stacy, comments about the business focus, both historically and currently: "We stay focused on ease of use, stability, speedy workflow and pipeline integration." It's easy looking backwards to see what should have happened; in MAXON's case, it's what did happen. 1996 saw the release of C4D for both the Mac and PC platforms. Not only that, but the first multiprocessor versions were also released, enabling users to fully utilise all CPU cycles available. However, all this capability was confined to a limited part of the globe.

So where do you go when you want to make a splash in the world of computer graphics? Well, SIGGRAPH. MAXON debuted CINEMA 4D for

CINEMA 4D websites

Some of these sites are highly C4D-centric, and others extend or enhance a C4D user's experience and final products.

www.rebusfarm.com
C4D render farm plug-in

http://cg.tutsplus.com/category/tutorials/maxon-cinema-4d/

http://c4davenue.com/

http://biomekk.com/

www.kuroyumes-developmentzone.com/index.html

http://jawset.com/index.php/

http://cinema4dnews.blogspot.com/

http://3dattack.us/

www.motionworks.com.au/category/tips

www.videocopilot.net

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» *Tribute to Luis Royo*
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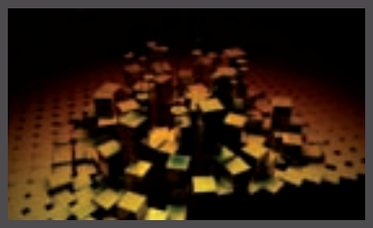
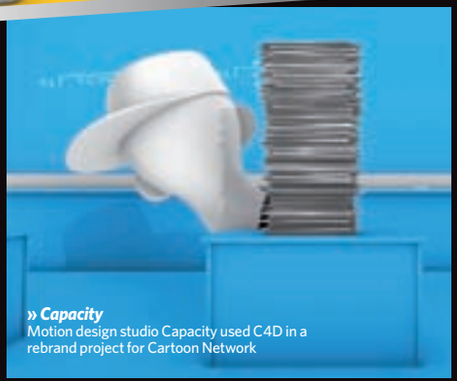
Key features



Simply put, MAXON CINEMA 4D has been around long enough to become crafted workmanship that does everything very well. But this is true of all production-grade 3D packages that have a 15-year history. So what makes C4D stand apart? To start with, the MoGraph and new MoDynamics are astonishingly easy to use and allow for significant customisation. MoGraph is a slider-based feature that allows for simple creation and animation of arrays or replications into the thousands. These can be geometrically perfect, varied or intensely organic, yet kind to 32- or 64-bit systems because the replicates are merely instantiations of the primary object or objects. Forests and cityscapes are easily reproducible, yet these replicates aren't restricted to the same colour or other behaviours thanks to other MoGraph shader and effector options that are employed with drag-and-drop ease.

Furthermore, there is no guesswork either. Users can see real-time animation updates. Extending this completely configurable animation capability is MoDynamics, which likewise allows for real-time physics thanks to the Bullet solver. Break things, drop huge arrays of objects and knock things over without a care. Throw in PSD-compliant BodyPainting in 3D, excellent UV unwraps, NURBS modelling and rock-solid stability, and what's not to like?



» *Capacity*
Motion design studio Capacity used C4D in a rebrand project for Cartoon Network

the North American market in January 1998, garnering SIGGRAPH's coveted Best Product recognition as well as many other awards. Only a year later, C4D took home the Best of Show award from the Macworld convention in San Francisco.

So how exactly do you follow up such praise coupled with the fickle short attention span of the computer market? By offering even more, that's how. In 2000, a tidy little companion piece of software introduced by MAXON called BodyPaint 3D – a separate application for texturing and painting surfaces in real-time 3D – was released with several features that Photoshop still doesn't have to this day. BodyPaint was designed as a helper application that integrated with other mainstream 3D applications as well as seamless integration with C4D.

The additions to C4D have come hard and fast since then – a steady roll-out of lighting, rendering, hair and particle modules and more. However, an additional claim to fame is the unique MoGraph capability that is arguably unmatched by other CG software packages. It's the MoGraph and MoDynamics modules that create those complex, replicated object animations seen in television. Add that to 64-bit support on Mac and PC platforms and seamless integration into postprocession workflows like After Effects, Combustion, Motion and others, and you have a 3D and painting application that is cross-industry capable.

> “BodyPaint was designed as a helper application that integrated with other mainstream 3D applications as well as seamless integration with C4D”

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» *Porsche 911 GT2*
© Dennis Frick

CINEMA 4D AT WORK

Professionals who use C4D seem to adore it, even though it doesn't always seem to have the sizzle of competing products, as Luke Stacy provides some insight: "Sometimes, we're not convinced that the very latest ideas will stand up to real-world usage." But that's not always the case, as Stacy continues: "BodyPaint 3D was years ahead of its time in enabling artists to paint on ray-traced 3D models in real-time, using multiple layers and painting in multiple channels across multiple objects."

How then does MAXON discern what feature sets get put into C4D? "We do lots of studio visits and ask what things are a chore at the moment, what could be better and how could we make things easier. We evaluate thousands of ideas sent to the suggestions area of our website, we're always monitoring user forums and we carry out customer surveys. And our support team is vital, as they are finding out where our customers are having difficulties. And yes, we have a very talented design team," shares Stacy. It's this kind of user inclusion that wins the loyalty of users worldwide. "The way we see it is that CINEMA 4D is just one of the tools in an artist's toolset," comments Stacy. "If apps work well together, that makes an artist's life easier. The artist can work faster and better that way. Ultimately, our job is to help artists be successful, so playing friendly with the tools they use is an essential part of that."

Anybody that has spent any time in the CG world can become jaded to such comments of user-friendliness. But MAXON backs up the language, as Stacy expands: "We try and make it easy for people coming from other apps to get into [CINEMA 4D]. Even better, if you don't like anything about the CINEMA 4D interface, it's easy to change. CINEMA 4D is regarded by many as having the most customisable interface. That goes all the way from redefining your shortcuts right down to replacing CINEMA 4D's tool icons with your own graphics.

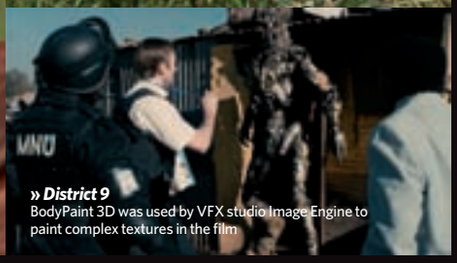
This sounds all well and good, but what about deadline-driven studios where money and reputations are made or lost? Sony Pictures Imageworks' lead matte painter Steve Matson offers some real-world commentary: "Late in the production, it was decided that the matte department would handle almost all the external environments for *Beowulf*." This was a crushing responsibility with a mere six months left in production and over 350 shots to perform, as Matson says: "We have been developing an artist-friendly pipeline for some time now. This really paid off when we had to ramp up our team from about five painters to up to twelve in a very short time."

Matson describes keeping on budget using C4D tools and MAXON's integration capabilities within their pipeline, while creating a beach scene that couldn't be filmed: "I started by laying out a couple of shots in Photoshop and then went out to Hermosa Beach and shot waves and the beach in HD. We then integrated the footage with the Photoshop paintings using After Effects.

> "If apps work well together, that makes an artist's life easier. The artist can work faster and better that way"

» ***Cloudy with a Chance of Meatballs***
360-degree Environment maps were created in C4D for the film's burger rain sequence

» ***Prehistoric Park***
MAXON's BodyPaint 3D was used to create Texture maps in ITV's docu-fiction television miniseries


» ***District 9***
BodyPaint 3D was used by VFX studio Image Engine to paint complex textures in the film

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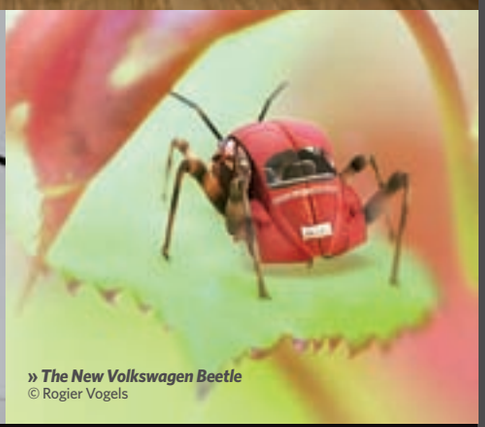
» *Bath*
© Enrique Rueda

» *Single Seat Helicopter Design*
© Igarashi Design



» *The New Volkswagen Beetle*
© Rogier Vogels

The composition was then piped into CINEMA 4D and projected onto scene geometry imported from Maya. Almost everything we produced was output by CINEMA 4D as a rendered, finished background plate."

Of course, cinema isn't the only industry with tight budgets and time constraints. Near and dear to many readers is the newly minted *Dr Who*, which is created within very limited requirements. Simon Wicker, lead matte painter, knows this best, as he comments on rendering 18-million-polygon scenes: "This is one of the things I like about CINEMA 4D – you can always push the limits. When you work on television, you don't always have time to come up with an elegant solution for problems. Often, you have to take a brute-force approach and keep your fingers crossed. So far, CINEMA 4D has always come up trumps."

A testimony to C4D's ease of use is related by Stacy, as he says: "We were a bit stunned to find out that top surgeons at Moorfields Eye Hospital had taken it upon themselves to learn 3D animation when they have such a packed schedule. They have been using CINEMA 4D to create hundreds of animations that are helping to train other eye surgeons. They have even created animations while on flights."

For CG professionals entering the broadcast and motion graphic market, it won't take long to discover C4D is the main player thanks to its innovative MoGraph and MoDynamics capabilities. Big Machine Design's co-creative director Ken Carlson relates his experience in using C4D to animate wildly zooming ribbons and floral patterns within live footage for a television intro. "It was great because CINEMA 4D's built-in tools made it so easy for us to go back and forth between CINEMA 4D and After Effects," says Carlson. "This gave us the time to try things and play around with compositing and timing without feeling like we were jeopardising our deadline." Great indeed.

The CINEMA 4D community

We seem to be achieving a critical mass in CG websites. It's a combination of many skilled users, easily deployed forums and template websites plus video software. The result is a fragmentation of user groups and tutorials in the same way cable TV and web TV have fragmented the TV viewing audiences. This can make tracking down useful sites a little more challenging.

The CINEMA 4D community is no exception to this phenomenon. The available online groups for MAXON users can be broken into two categories: users/sharers and tutorial providers. Stalwarts for users/sharers include CG Society (**www.cgsociety.org**), C4D Cafe (**www.c4dcafe.com**), Renderosity (**www.renderosity.com**), C4D Zone (**www.c4dzone.com**) and C4D Portal (**www.c4dportal.com**). These sites have a good mix of both professionals and hobbyists, and are welcoming of all skill levels. They are great for asking questions, sharing images and soliciting advice. What's more, these sites are outstanding for inspiration. It doesn't matter how good you are, there is somebody out there who is using the software differently than you are at least.

The other kind of site out there is the tutorial site. Many of these purvey products, and some are simply somebody with computer video capture who experiments with C4D and posts the results. Many times, these sites also have related pipeline software so you can also come across ways C4D is utilised with other tools. MAXON has its own Cineversity.com, which is good for learning but really doesn't have any feedback/dialogue options, plus costs money. Greyscale Gorilla (**http://greyscalegorilla.com/blog/category/cinema4d/**) is the musings and experiments of Nick Campbell, with a little humour and limited dialogue, but with enthusiastic viewers who provide insights into Campbell's tutorials. But the issue you will find with most tutorial sites is that most of them expect the viewers to already have a working knowledge of the software and 3D conventions, which can be a problem if you are new to the world of 3D.

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Avatar REVEALED

Duncan Evans talks to Prime Focus, NVIDIA and Scott Patton of Legacy Effects about the work they did on James Cameron's CGI blockbuster

After taking $71 million on its opening weekend in late December, James Cameron's *Avatar* had grossed over $1 billion by early January, making it one of the most successful films ever. The visual effects successfully merged live-action actors and scenery with CGI characters and scenery, and produced the stunning all-CGI world of Pandora, raising the bar on what could be achieved. Although Cameron had the idea for the film over a decade ago, and the marines in it are straight out of his *Aliens* film from 1986, it was only in the last four years that technology had advanced far enough to commit the vast resources required – reputedly near the $300 million mark – to bring it to the screen. We talked to some of the people who helped make it happen, from Scott Patton – the original ZBrush sculptor of the Na'vi – to Prime Focus, which created the holographic images and displays, and NVIDIA whose GPU technology made the rendering process possible for such vast and complex scenes.

» *Into action*
The CGI characters are integrated into live footage, which transitions into total CGI

Powering the project

The main VFX were assigned to New Zealand's Weta Digital, which rose to fame with the *Lord of the Rings* films. Weta was given the task of creating scenes with as many as 800 fully CG characters within the incredibly detailed world of Pandora. The computing grunt required to render the *Avatar* shots was higher than anything Weta Digital had faced before, so it turned to NVIDIA, the inventor of the graphics processing unit (GPU). Weta was already a user of NVIDIA's Quadro and Tesla graphics cards in its visual effects pipeline.

» *Blue-skinned aliens*
The Na'vi were designed to suggest a primitive yet harmonious culture

"The complexity of *Avatar* motivated us to think about rendering differently," explained Sebastian Sylwan, Weta Digital's head of research and development. "We do our final Beauty pass renders with RenderMan, but we moved the bulk of the calculation to a precomputation step to optimise artistic iterations on *Avatar*'s huge data sets. The issues we needed to solve weren't as much about rendering as they were about high-performance computing, and we realised that using the massively parallel power of a GPU to solve problems is NVIDIA's expertise."

In March of 2009, Weta Digital's CTO Paul Ryan, rendering research lead Luca Fascione and Jacopo Pantaleoni, an NVIDIA Research senior architect, discussed what Weta was up against. "Paul let me know that for the first time in the history of CG visual effects, the number of polygons required was going to be measured in billions rather than in millions," said Pantaleoni. "Luca described their unique approach to lighting, and their need for a scalable solution to ray trace the entire, amazingly complex world they were about to create."

Weta Digital R&D and NVIDIA Research began their collaboration, with Pantaleoni travelling to New Zealand and residing there for several months to start development on a ray-tracing software solution that could handle the billions of polygons required in *Avatar*'s complex sequences.

Together, NVIDIA and Weta Digital developed a new precomputation engine, dubbed PantaRay, to bring high-performance computing power into Weta's VFX pipeline. This powerful ray-tracing system was designed specifically to accelerate the precomputation of scene occlusion information used throughout Weta's rendering pipeline to allow quick and dynamic precomputation of image-based lighting.

This innovative approach enabled Weta Digital to render more complex scenes in less time, while using less memory and fewer processors. The result gave artists and the director the ability to make more changes to improve the look and feel of the scenes. With NVIDIA's co-development efforts, Weta Digital generated scenes that previously would have been time- and cost-prohibitive.

A shot that exemplifies the advantages Weta Digital achieved with PantaRay can be seen in the movie's promo trailer. The shot from a helicopter looking over a huge flock of hundreds of purple creatures flying over water, with a massive tree-covered mountain in the background, was precomputed in just a day and a half using

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» *Command centre*
James Cameron stands in the command centre with a green screen behind the window

PantaRay. "That shot would have taken a week with previous methods," said Weta's Fascione. "The fact that it was so much faster with PantaRay meant that we were able to create a much more beautiful shot. The colour separation between distances is clean and clear, and you can see fine detail on every leaf. The computational power of PantaRay made the difference."

When running on GPUs, PantaRay's ray-tracing process has proven to be up to 25 times faster than on CPUs. "If we think about how long it would take to handle this much complexity with traditional methods, we're probably close to 100 times faster," said Sylwan.

"Because the complexity continues to scale on each project we do, the amount we need to render continues to multiply," according to Martin Hill, head of shading at Weta Digital. "And the more complex the rendering, the harder it is to light the scene. PantaRay makes the complicated scenes as easy to light as the simple scenes."

"Partnerships with groups like Weta Digital's R&D team bring us to the absolute bleeding edge of production technology," said Dominick Spina, digital film technology manager for NVIDIA. "Working with Weta on *Avatar* was an amazing collaboration. Nothing in the development of PantaRay was an abstraction; it was 100 per cent production-driven. We'll continue to collaborate extensively like this with top visual effects and animation companies to bring more and more of NVIDIA's expertise to have a bearing on solving the most complex production technology problems in order to free artists to create at higher levels," Spina added.

> "The issues we needed to solve weren't as much about rendering as they were about high-performance computing, and we realised that using the massively parallel power of a GPU to solve problems is NVIDIA's expertise"
>
> **Sebastian Sylwan,** head of research, Weta Digital

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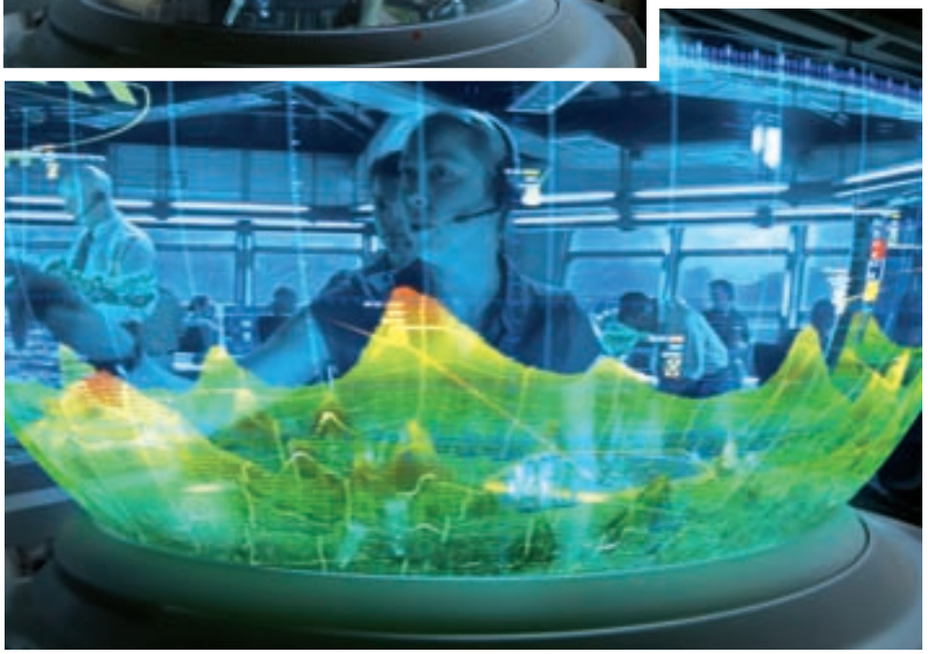

» *The 3D displays*
Prime Focus produced the holographic displays, which work in 3D

> Chris Bond and our pipeline team developed a custom graphics script we dubbed SAGI for Screen Art Graphic Interface

Neil Huxley, graphics supervisor, Prime Focus

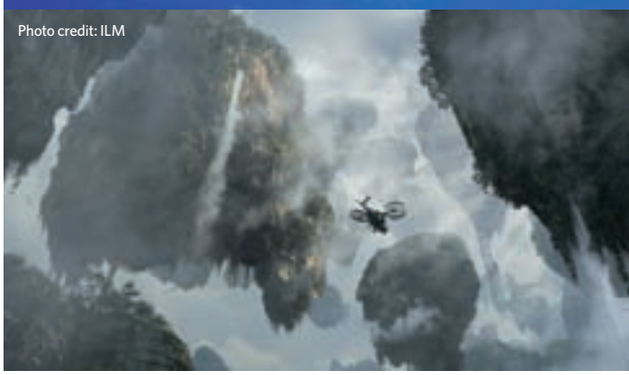

Photo credit: ILM

Bring me the holodecks

Prime Focus, interviewed in issue 9 of **3D Artist**, was responsible for numerous stereographic and Holotable displays, animated graphics, immersive environments and other visual effects. Even for this, a team of around 90 people across the range of Prime Focus's North American facilities was required, with president and senior visual effects supervisor Chris Bond and visual effects producer Chris Del Conte driving the project from the LA office. Graphics supervisor Neil Huxley art-directed and oversaw the design of the motion graphics elements. The bulk of Prime Focus's work was done for the film's Bio Lab and Ops Centre, the bustling hub for military operations and one of the key environments in the film.

"Our experience working with stereoscopic 3D material, both on the movie *Journey to the Center of the Earth 3D* and through our proprietary View-D technology, more than prepared us for *Avatar*," said Bond. "Having the resources of our talented teams across Winnipeg and Vancouver at our disposal and set up for remote collaboration with our Los Angeles crew also meant that we could ramp up at a moment's notice when we were awarded additional shots."

Prime Focus designed displays for the Ops Centre's Holotable over which the film's main characters discuss their missions and plans to mine a valuable mineral found on the planet of Pandora. In one key scene, the film's protagonist Jake Sully (Sam Worthington) and Colonel Quaritch (Stephen Lang) bring up a three-dimensional hologram of the Home Tree, where the Na'vi, Pandora's indigenous population, live.

Using the original live-action plate of a table with a green screen across the top, Prime Focus modelled the hardware that went inside the table, the projector beams and added graphics projected above the table of the terrain, including the Home Tree. These graphics were designed in

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Photo credit: Mark Fellman/Weta Digital

©All holodeck and VFX images on this spread supplied courtesy of Prime Focus VFX

» *The Holotable*
The display was given a scanline-style quality to make it look like a satellite feed

2D in Adobe Illustrator, animated in Adobe After Effects, placed on cards in 3D and rendered in Autodesk 3ds Max. Prime Focus Software's Krakatoa particle system was used for the 3D terrain, which gave the images a scanlined LIDAR-like quality, as if a satellite roving the planet's atmosphere captured the footage.

To make the Ops Centre feel alive and bustling with activity, Prime Focus also designed interactive stereographic displays for dozens of screens, so every monitor had a sense of movement and depth. Each screen was composed of four to eight layers, rendered in different passes and composited together.

"Chris Bond and our pipeline team developed a custom graphics script we dubbed SAGI for Screen Art Graphic Interface," shares Huxley. "This script takes After Effects renders and binds them to a 3ds Max assembly file, which would negate human error. Considering that some of our shots had 30 screens in them, trying to work out which graphic goes into which screen would have been very time-consuming. SAGI helped us streamline this process, so if James didn't like a particular graphic then we could easily swap it. This enabled us to turn around client revisions very quickly. James would give us the change, the graphics team would address the note, render it through SAGI overnight, recomp the graphic in the morning watch it down in our Real-D theatre in stereo 3D, do a quality check in stereo and then have it ready for James to check 24 hours after giving us the initial note."

The Prime Focus VFX team also created displays called Immersives that provided a 180-degree stereo perspective, allowing military personnel to control air traffic flow in 3D. Additionally, Prime Focus contributed CG helicopters, buildings and atmospheric elements seen from the Ops Centre and commissary windows in several sequences.

> "Our experience working with stereoscopic 3D material, both on the movie *Journey to the Center of the Earth 3D* and through our proprietary View-D technology, more than prepared us for *Avatar*"
>
> **Chris Bond,**
> senior visual effects supervisor,
> Prime Focus

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Bringing the Na'vi to life

Company Legacy Effects
Job Concept artist
Company website
www.legacyefx.com
Personal website
www.scottpattondesign.com
Biography I am a self-taught artist, sculptor and painter. I was a make-up effect artist and designer for the film industry for well over a decade. I switched to character designing and digital sculpting three years ago, and I could not be happier with the change!
Portfolio highlights
John Carter of Mars, 2012
Iron Man 2, 2010
Avatar, 2009
Terminator Salvation, 2009
Indiana Jones and the Kingdom of the Crystal Skull, 2008

Scott Patton is lead character designer at Legacy Effects, previously known as Stan Winston Studio. He spends his day being given a short brief on a film or character, maybe a page of the script, then he is usually left to his own devices. He spends that time designing and sculpting characters in Softimage and ZBrush, generating concept art from those sculpts. Incredibly, he usually only gets about two days before he has to present to the director. Patton's route into CGI was slightly unusual and landed him with the design task on the biggest CGI project ever.

Patton had just quit a make-up effects job at a shop he worked at for eight years and was determined to get a job doing digital character design and get the clay out from under his fingernails. He sent out some résumés and the first response was from Stan Winston Studio, ironically a make-up effect studio. Patton met with John Rosengrant (Stan Winston Studio alumnus and Legacy Effects co-owner) and they hit it off. He needed an artist who had some digital abilities, and Patton could speak make-up effects! Rosengrant said that they were doing designs for long-time collaborator James (or Jim) Cameron on his new project *Avatar*...

3D Artist: ***What kind of course did you do at university, or what training did you do?***
Scott Patton: None! I was a stupid kid, I wanted to play guitar and be a rock star! I didn't go to university (thank God for spellchecker); I kind of stumbled into make-up effects and was really lucky to have been surrounded by amazing artists. I tried to learn as much as I could, as a lot of the guys that do effects are the most talented people around. That was my education and I think it was a good one, for me at least. It caused me to look at CG in a different way than most people.

3DA: ***What software packages and tools do you use in your job and why those specifically?***
SP: I use Autodesk Softimage, ZBrush, headus and Photoshop. I use Softimage because I think it's an amazing 3D package, I really love building things in it. I can't explain why, but it almost seems organic in how it works. I love ZBrush, I saw the potential in that program from the first. It was like a light went on in my head and I saw all of its possibilities as a design tool. Besides, it makes me custom tools when I need them now, so I have to say nice things! headus UVLayout and Photoshop go hand in hand for me – I can lay out my UVs for painting and adjustment in Photoshop really quickly.

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» Expressions
James Cameron wanted to see sculpts of expressions so any problems could be fixed

Photo credit: All images on this spread courtesy of Scott Patton unless otherwise stated

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3DA: ***So let's talk about your work on* Avatar*. How were you briefed on creating the characters so that you set off in the right direction for the design?***
SP: Well, as most people know by now, Jim Cameron is a great artist himself. Jim showed us some sketches that he had done of the Viper Wolfs and of the Na'vi that were just beautiful. We could see the direction, but we really had no idea what a journey it would be.

3DA: ***What characters of the film was Stan Winston Studio/Legacy Effects given to create and which ones did you work on personally?***
SP: We were handed all the Na'vi and Avatars to design, as well as the Viper Wolfs and a few odd bugs. After we were on the film for a bit we were also asked to take the head of the Banshee, which was designed in 2D by Neville Page, and told to 'flesh it out'. I inherited the Banshee head and was charged with making it 'work' and look real. Jim wanted the mouth to open and work like a fish mouth with all the bones moving, but the teeth had to lay back in the mouth when it closed like a snake.

I was also responsible for designing the Avatars for Grace (Sigourney Weaver) and Norm (Joel Moore). Jim fell in love with ZBrush and wanted digital sculpts of everything, so I did about ten background Na'vi and a bunch of expression sculpts of the main characters, Jake and Neytiri. I did quite a bit on the Viper Wolfs too, but that was really a group effort.

3DA: ***How much creativity did you have in developing the alien look of the characters?***
SP: As I said, Jim had a strong idea of what they should look like, but he was very open to any idea that made them more real. Because the door was open to us, we always felt like a part of the creative process.

3DA: ***How much interaction was there with James Cameron during this process?***
SP: We met once or twice a week for a review. I took my laptop and pushed and pulled the models around live, and we all presented our artwork. He did what he does best – he directed! He knew what he wanted and was always there with a sketch or a sculpting tool. He's a very hands-on guy, and very talented as well. All you have to do is shut up and listen and you can learn a lot from him.

3DA: ***Wasn't this a pretty early version of ZBrush you were using at this point? Did that cause any problems?***
SP: ZBrush was still at a stage where you had no subtools and you were very limited by the polygon count, especially on a laptop.

3DA: ***One of the most impressive features of the character effects is that the Avatars actually resembled the human actors they represented. At what point in the entire process was this decided and, following that, what were the technical challenges in creating those particular Na'vi?***
SP: Having the actors show through was the intention from the beginning. It was really hard because Sam Worthington and Zoe Saldana were unknowns at the time we started, so it was hard to tell if we were getting it, as no one knew their faces enough to recognise them. I have been asked many times how I did the Na'vi sculpts, and I still don't know exactly how to answer. It was a ridiculously convoluted process. I was working with really heavy scans of the actors, chopping them up into the parts I needed and importing the scan parts and my Na'vi base meshes together. Remember, this was ZBrush 2 with no subtools. I was masking, pushing, pulling, exporting, importing – it was a nightmare! But I would eventually get to a place where I could start really just sculpting on the base mesh heads and then it was easy.

3DA: ***What kind of workflow process did you follow to create the characters in ZBrush?***
SP: It is a little easier now than it was back then; I have a catalogue of base meshes that I can pull out for just about anything. With all of the retopology tools ZBrush has now, I don't have to think much about the base, as I can fix it later. I start off with an idea in my head and just freely sculpt until I hit a groove. I can start to think about where I'm heading and then, if I really like it, I will apply retopology to it right away so that I can keep it clean. I rarely spend more than eight hours on a concept sculpt before poly painting and taking it into Photoshop. I try not to manipulate my Photoshop renderings too far from the models so I can do multiple views quickly.

3DA: ***You also produced some sheets showing expressions. Did that throw up any problems, like suddenly discovering that the character didn't work with certain expressions?***
SP: Yeah, that would happen and Jim would say, "That looks like crap. If we can't make the expressions look right, then we change the design so it will look right." He was committed to making it look perfect.

3DA: ***From all reports, James Cameron was a very hands-on director for this project. How much direct interaction did you have with him during the process of creating the characters?***
SP: Jim was very involved and very hands-on. It was cool, just as long as his hands weren't on your neck! All joking aside, the man is extremely talented and he knows your job better than you do... and if he has to prove it, then you are in for a schooling! He was *Avatar*; it was Jim's idea and Jim's world.

» *Original ZBrush sculpts*
The Na'vi were originally designed to be generic, but then were modified for specific characters

3DA: ***Have you seen the completed film? What did you think?***
SP: Yes, and I was amazed – it was way beyond what I expected. It makes you proud to be a part of something that big.

> "Jim showed us some sketches that he had done of the Viper Wolfs and of the Na'vi that were just beautiful"
>
> **Scott Patton,** lead character designer, Legacy Effects

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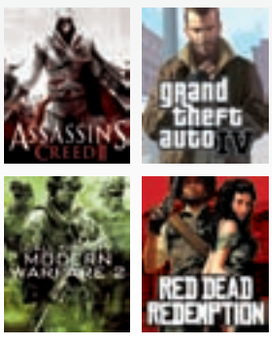

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Step by step: Design an illustrative render

Blue Dream 2009

"Miniature painting is an old art style that originated in Eastern culture. This is an attempt to experience it in the 3D world"

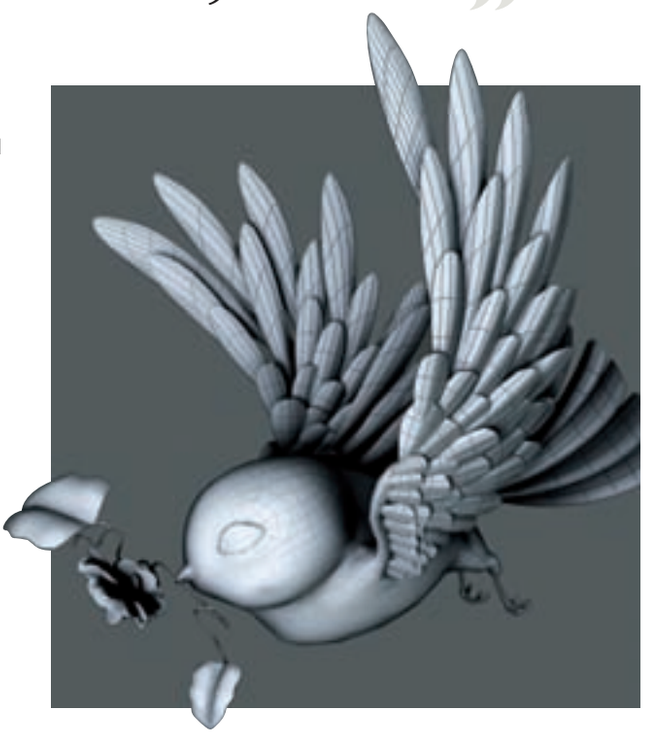
Ali Jalali is a 3D character artist and animator

This is a step-by-step tutorial describing all the levels of making the *Blue Dream* image, including where the idea came from, which inspiration sources I used and which software techniques I experienced in this image. As this was a still image, the models and character were done just so that they fit well in the scene – there was no need to rig or animate them.

I wanted to illustrate the beauty of a Persian girl through traditional miniature art in Persia, but in the style of a new generation. Mr Farshchian is the master of this style in Iran, and his art was a great source to make my idea.

These steps are all personal solutions and techniques and don't follow any standard studio mechanism, but they might be useful for those who are working in CG.

There is an OBJ file of the upper body on this issue's CD. You will see that I haven't modelled the back of the character; only what you see in the image is modelled.

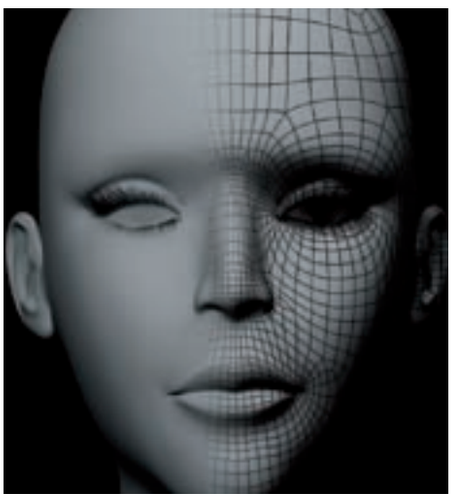


Concepts

Inspiration behind the figure

01 These are great miniature paintings done by Mr Farshchian. The exaggerated figures combined with meaningful colours in a visionary environment are the main references I had to focus on. The subjects are mostly about love, God and heavenly feelings. I focused on these to get the main ideas for the image.

02 Here is a rough sketch made with basic objects in the scene to get the main idea of the composition. I tried to use the elements in a way that would lead the viewer to look to her face first. From the first moment you see the image, her face attracts the eye before any other part, thanks to the hand pointing to the face, the bird looking at her, etc.



03 As my main idea was to portray the beauty of the character, I had to work a lot with the face and the feeling it portrayed. In this image you can see the basic model and wireframe I did for her face, but I was still not satisfied; at this stage, her face is more European than Persian.

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On the Disc

Save yourself some modelling time by using the model and maps created here.

Upper Body.obj

Modelling, Composition, Texturing

Step by step

Easy-to-follow guides take you from concept to the final render

Artist info

Ali Jalali

Personal portfolio site http://living_for_cg.cgsociety.org/gallery/

Country Iran

Software used 3ds Max, Photoshop, V-Ray

Expertise Ali is a 3D character artist and animator

Software used in this piece

3ds Max | Photoshop | V-Ray

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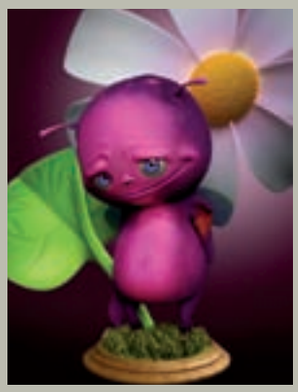
Artist Showcase

Ali Jalali

I'm a self-taught 3D artist and I have been working professionally for about five years in the animation industry. I changed my field of education from mathematics to art six years ago, and started working with some 3D software, getting more interested in character modelling and animating. Eventually, I want to be a professional character modeller.



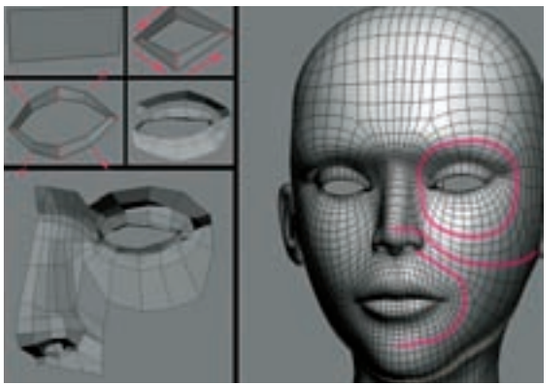
Insect **3ds Max, V-Ray, ZBrush (2007)**
This insect is a personal work done just for fun to test my first experiences with ZBrush. I modelled the base mesh in 3ds Max and then worked on details in ZBrush. The texture was also poly painted in ZBrush. I then used the Displace map with a base mesh and rendered with V-Ray in 3ds Max

Spring girl **Maya, ZBrush, Photoshop, mental ray (2009)**
This was done just to show some inner feelings. This is my first still image in Maya. The girl and cloth were done in Maya as base meshes and I added the details in ZBrush. The body texture was created via poly painting. I wanted to show the lovely contrast between two different scenes

Beast WIP
Maya, ZBrush (2009)
This is a work in progress and I decided to show it here as a ZBrush sculpt. The base meshes were done in Maya and I worked on the details in ZBrush. I guess it would be my first complete warrior model and I hope to finish it. It's a full-body work and here is the head

Modelling the figure

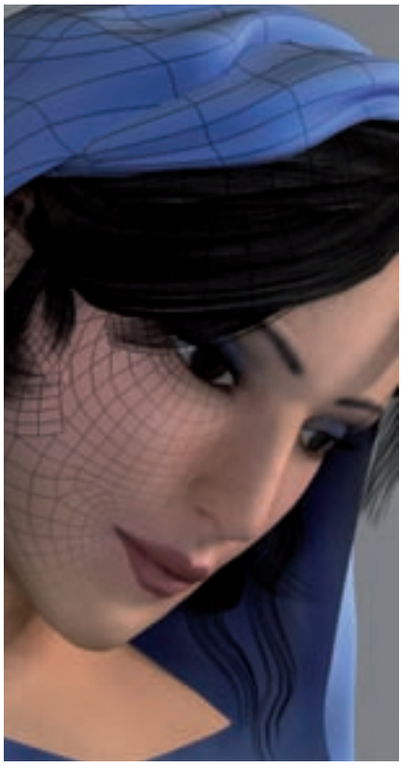
Getting the proportions right



04 **I used a** poly modelling technique for the head. First, I started with a squared plane and extruded the edges to form the eye, one level at a time. I always try to organise my face polys for animation purposes, while this also helps out when making facial expressions. The main paths to follow are around the eyes, mouth and nose.

05 **I didn't need** dynamic hair, so I set some planes carefully on the head how I wanted the hair to act, and then used a hair texture as the diffuse colour and a hairstyle alpha as the opacity of my material. I also used this method for her eyelashes, which is common in game modelling.

06 **I started texturing** the face to make sure I was going in the right direction for the scene that I had in mind. I worked on half of the face and added a UVW Mapping modifier in cylindrical mode (the green line on the gizmo is on the back). After that, I added an Unwrap UVW to be able to edit my UV layout.



07 **This is a** test render of the head so I could keep a better image of how she was going to look like. You can see that the scarf is added at this point. I just used a low-poly plane and added polys to form the shape of scarf.

08 **The pose was** dictated according to what I wanted in the image, so I had to be careful about the figure selection and did figure tests as much as I could, then modelling begun from the head to the shoes. Clothes and wrinkles were done just like the scarf.

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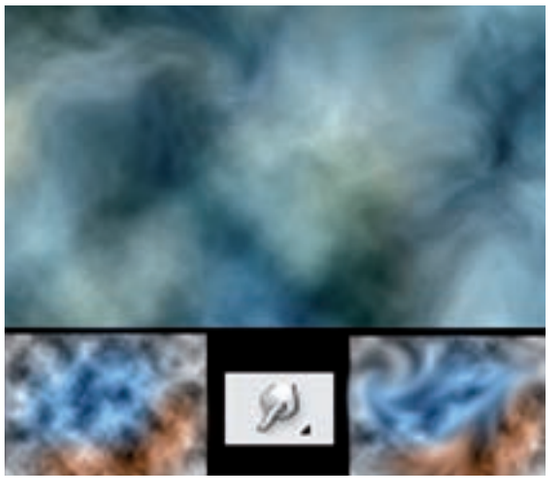
Creating the background

Putting the figure into place

09 **The bird is** done via box modelling and I used planes for the feathers. The figure is the same as the girl and I did it in Poser. In this image, you can see the clay render and its wire. The bird is so far back in the image that I only needed to use simple gradients for its texture and feathers.



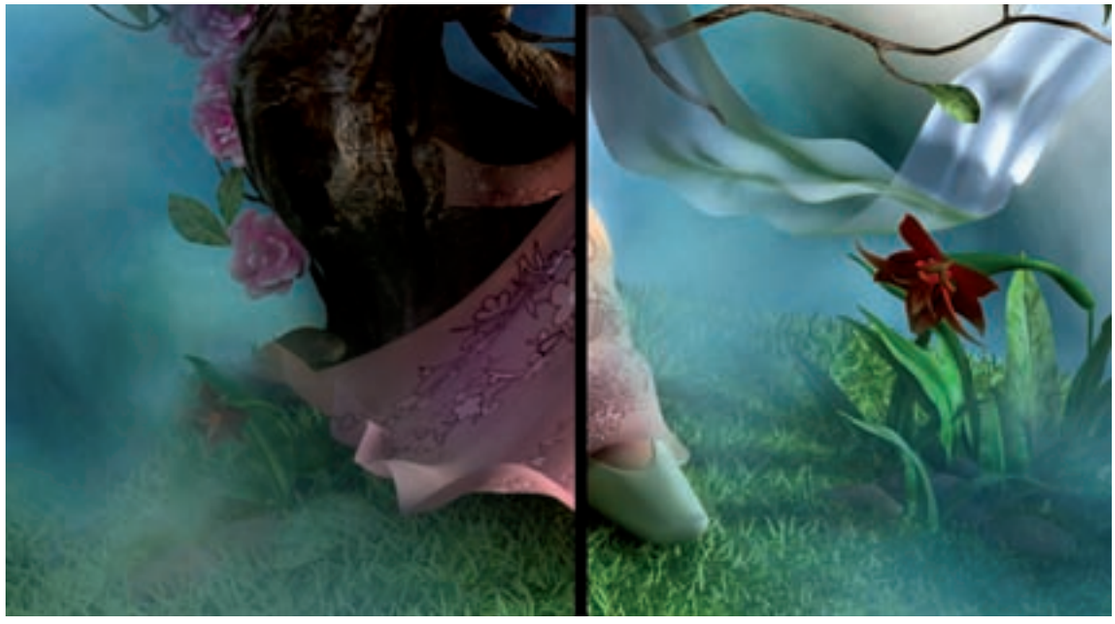
11 **Backgrounds in miniature** paintings are unique, as they are cloudy and colourful with some elements. The cloudy background is made simply with Photoshop. From the Filter panel in Render Filters, I made a cloud, picked a brush in colour mode and made my colours on it. Then I used the Smudge tool to shape it.

10 **The grass is** made with no plug-in; instead, I used Scattering in 3ds Max. I made one grass sample and instanced it on the ground surface using Scattering. The Duplicate number is 30,000 in Even mode and I played a bit with the Rotation and Translation. The Display mode is 1.0 % Proxy.

Hurdles to overcome

The point I was struggling with the most was the style. It was something with few or no samples around so I almost didn't know what it was going to look like, and I chose the step-by-step process to see what it looked like at every stage. On the other hand, when I made this image it was a great experience to use what I have learnt as a beginner and put together some of the techniques I gathered from the internet, friends and projects, so this project was challenging for me both in technique and style.

12 **For lighting, I** used the standard lighting set and the V-Ray plug-in. It has an Omni as a key light, which cast the shadows from the right, a Planar V-Ray light as a fill light to give the soft, smooth feeling all over it and a Spot light to cast a nice white line around the objects (you can see this on the scarf).



30 mins render time Resolution: 2,365 x 3,000

13 **The last step** was compositing the 2D clouds with the 3D rendered image. I needed a 3D cloud to cover the 3D image. With my 2D cloud image and the Clone Stamp tool in Photoshop, I copied some parts of the cloud on a different layer above the 3D image so it seems like there is a 2D cloud made around the object.

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Create a futuristic city

Cityscape 2008

"Use Maya to help create buildings in a city layout and then use Photoshop to paint in the details"

Marco Bauriedel specialises in shading, lighting, texturing and laying out render passes

Software used in this piece

Maya Photoshop

behind the scenes

3D artists explain the techniques behind their amazing artwork

Artist info

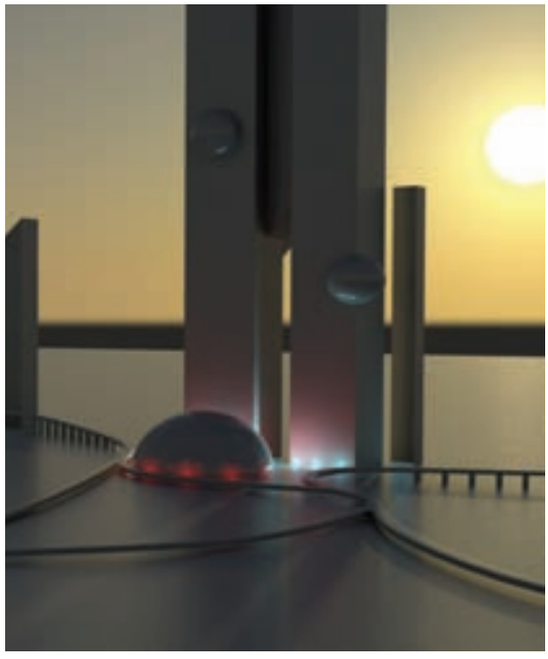
Marco Bauriedel

Personal portfolio site
www.marcobauriedel.com

Country Germany

Software used
Maya and Photoshop

Expertise Marco specialises in shading, lighting and texturing, laying out and seeing what can be created with render passes in Photoshop or Nuke



This tutorial will lead you through the creation of a futuristic cityscape in a fantastical setting, as it doesn't exist in reality these days. It depicts what can be achieved when technological advancements and the imagination are combined.

Maya was used to create the basic geometry as well as some lighting references of a few of the buildings, the highway and the bridge. Photoshop was the tool of choice for more than 90 per cent of this image.

The hardest task was to get all the details together and make them look integrated in the final piece. Maya helped a lot in order to find a starting point and paint on that in combination with photographs.

I will be leading you through the whole creation process of *Cityscape*, but first I will start off by describing how I do my concepts.

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Modelling, Composition, Painting

On the Disc

Save yourself some modelling time by using the model and maps created here

Cityscape.mb
wip_03.jpg
IMG_6300.jpg
IMG_6784.jpg
IMG_7611.jpg
IMG_7245.jpg
IMG_5911.jpg
IMG_6143.jpg
IMG_6145.jpg

Concept

Concepts get your imagination going and make the process more enjoyable than starting with little thumbnails and photographs on a blank canvas from scratch.

01 Concepts on paper

Drawing quick boxes with a ballpoint pen and filling it with rough lines that mark a composition helps tremendously to pick the basic scheme you want to go after. By using a ballpoint pen instead of a pencil, you force yourself to just do a new sketch when you mess up, which raises the chance of even more ideas coming up. Starting with a horizon line (if inside the view) and putting focal points or vanishing points using the rule of thirds is the best way to go A.

02 Concepts in Photoshop

It's time to bring the chosen composition into Photoshop by scanning or just re-creating the sketch by eye with big greyscale strokes that start to form shapes. In this phase, it's important to go beyond rough line sketching and define a logical lighting situation and basic depth values in the image B.

03 Finish the concept

A colour scheme is then added to the sketch to support the lighting situation and basic mood. Always remember that the colour of the sky tints shadowed areas much more than lit areas. The further objects are in z-space, the more they seem saturated, coloured and valued like the sky at the horizon line.

With these thoughts in mind, it's easier to create your colour palette. As this project is a personal painting, I kept the freedom of developing the colour scheme away from the initial concept during the process towards the final piece C.

A These are some raw concepts on paper that help to find ideas quickly and efficiently

B Here, grey values start to mark depth in an early Photoshop sketch

C This is the final concept with a basic atmosphere, which frames the idea pretty well

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Modelling the scene

How the basic scene was arranged in Maya

Problems and solutions

I wanted to quickly create some streets and a bridge for this concept, which would be lit and rendered to be even usable in a later, more detailed and more real version of the painting, and just fit in as a base. Modelling geometry in perspective onto your concept is a pretty quick way to add basic shapes with basic lighting. The hardest task may be to get the perspective and distance dimensions correct.

A stretched-out highly subdivided ground plane is a great help for the perspective when adjusted to end on the concept's horizon line.

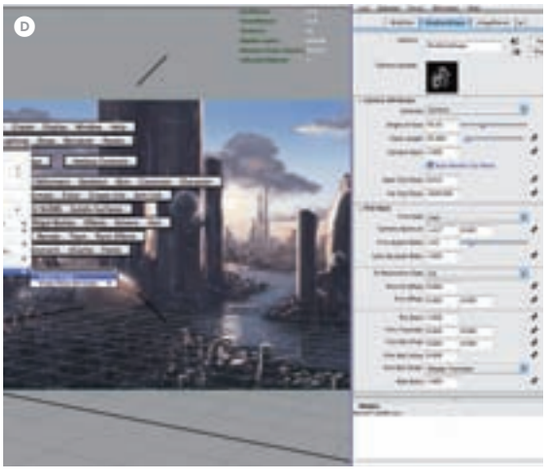
For the modelling, lock, key or bookmark your camera when the perspective is set so you don't lose the settings when accidentally changing the camera's view.

Start modelling with very basic shapes that are aligned as well as possible, and use the power of Physical Sun and Sky for really quick render results that fit your concept's time of day.

Some coloured reflections may give great details that later help a lot to sell rather simple geometry or help add realism and lighting on top of objects placed in Photoshop.

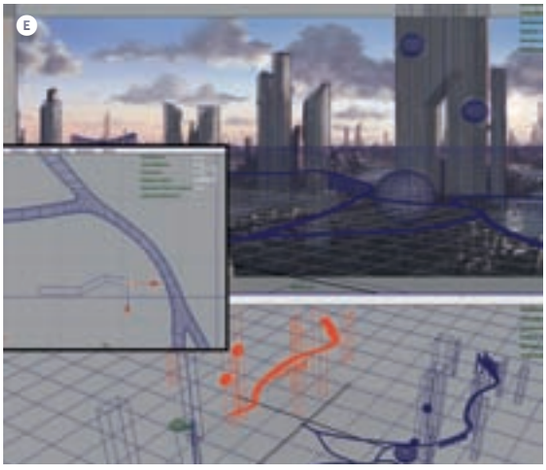
04 Camera alignment and scene setup

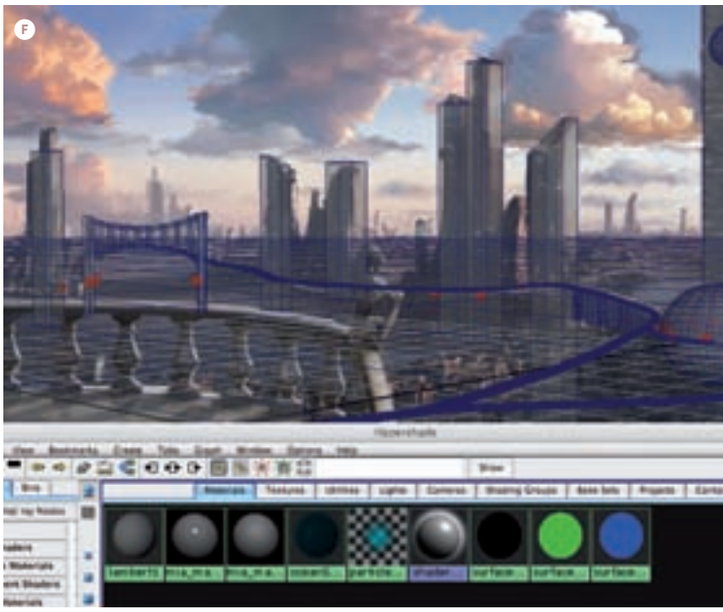
After creating a simple camera in Maya, a background image is added by looking through the newly created camera, accessing the Space menu bar and importing the image plane as shown in the screenshot. In this case, the standard value of 35 in Focal Length works out pretty well, because my renders work with pretty rough alignments and no additional adjustments of the image plane were needed, as the major objects we want to create are in the centre of the image. To be sure the whole concept is in the camera view, choose Horizontal at Fit Resolution Gate D.



05 Set the perspective and modelling

A stretched-out ground plane marking a clear horizon line is a perfect base to get everything in place. The foreground's stairs and two distant buildings are then modelled and aligned to fit in the camera's view, and have a pretty logical distance in a perspective view. If this lines up, the other simple cube buildings, bridge, the bridge's piers and spheres are created to roughly fit in a perspective view and more precisely fit in the camera's view. For the highways, a cube is created and its faces are extruded over and over again and later smoothed to form the street's shape E.

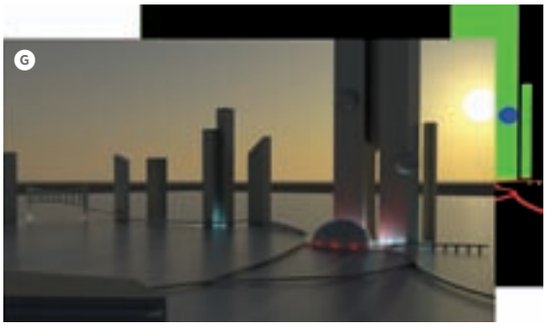




06 Lighting and shading

At this stage two mia_materials are defined: one having a Glossiness of 1.0 for all spheres that will have sharp reflections, and the other shader having a Glossiness of just below 0.3 to receive rough reflections, which is also assigned to all other objects.

To have more reflections going on, parts of the city are duplicated towards the camera (marked red in the modelling screenshot). Then Point lights are positioned and coloured differently to have some variation. Additionally, the Physical Sun and Sky settings are used to roughly imitate the time of day and direction of the sun F.



07 Render for Photoshop workflow

For the rendering, the Production render preset is chosen and Final Gather is activated with a Filtering of 1.

In addition to the Beauty render, the Occlusion pass always gives more depth. Sometimes it's needed to tint it to a warm colour in postproduction before multiplying onto the Beauty pass for better integration into the image. One of the best things about 3D renders are masks for any geometry, which can be quickly rendered with surface shaders in any colour to extract any shape with the Magic Wand tool in Photoshop G.

D Import the image into the scene connected to a new render camera

E This shows the modelled city in two perspectives and the top view of the streets with an extrusion example

F Position the lights and create shaders for a basic composition

G The final renderings as they were used to get the imagination going

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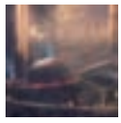


Painting in the main details

How the concept was developed towards a painting

08 Add first photographs

The first step is to add photo material to the image that roughly fits the building's shapes in the concept. The photos are stretched and cloned to fill up as much space as possible for a good painting base.

Obvious perspective issues should be erased through image distortion as early as possible, and later painted out for a more realistic feel H.

09 How to light the stairs out of a texture

To create the stairs in Photoshop, a perspective-transformed marble texture is used to match the stairs' shape. Then Occlusion-like shadows and core shadows are painted, followed by a screened mask for the lit areas that are later erased out on the shadow areas of the railings. Finally, the reflection of the railings is added to make the marble shiny I.

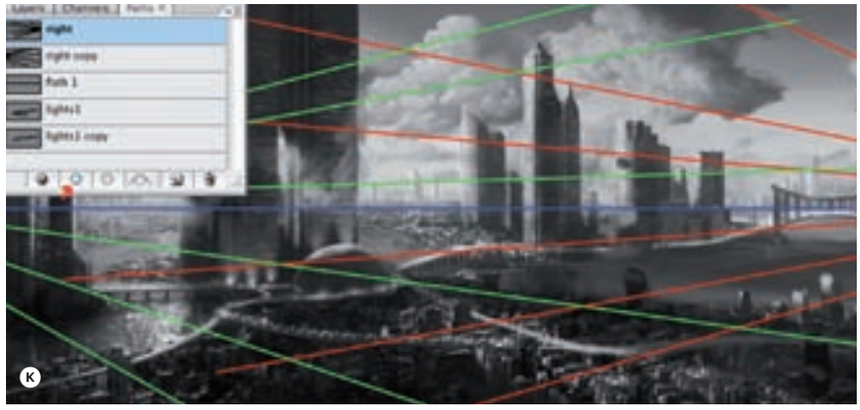
10 Roughly integrate the renderings

The renderings are layered on each other and then imported to the Photoshop painting. After that, the layer stack is positioned into the painting and the Occlusion is slightly set to Multiply on top of the geometry. With the help of the masks, separate adjustments are done and the whole geometry is cut out. Finally, details and more defined lighting are painted on top for rough integration J.

H The first photo material added to fill the concept with a rough base to start from more detail

11 Perspective orientation

For help on the perspective, it's great to have perspective lines. These are created with paths that stick to the vanishing points, and are then filled by choosing a small brush and pressing the little button marked in the screenshot below. You can see in the background that the balcony is gone for a wider view, which gives the whole image a more epic feel K.



I The process of taking a marble texture and creating a lit, shiny balcony out of it

J The rough integration of CG elements into the painting

K Grey values start to mark depth in an early Photoshop sketch

Lighting the sky

It was especially hard to find a nice composition for the sky, as my intention was to support the city with huge beautiful clouds that had to fit into the lighting scheme at the same time. Luckily, halfway through the process of the image I was on a trip through Nepal, where some fantastic-looking clouds found their way onto my DSLR's memory card (some are included on the CD). These had a lot of depth and made it easier for me to paint and adjust the light on. The lighting mood changed several times throughout the concept, because I tried many things. In the end I was most happy with a saturated low sun lighting, which in my opinion supports the sky details and gives more contrast. For the lighting in the city, a lot of painting light on top was used to get the overall lighting to work. I wanted to have both a great sky atmosphere and a little light from windows and lampposts.

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Artist Showcase

Marco Bauriedel

Born in 1982 in Germany, after starting out digitally in Deluxe Paint on an Amiga at the age of 12, I waited to discover my passion for art until turning 21. From then on, various fields of digital art were parts of my studies, covering CGI, animation, digital painting, compositing and programming.

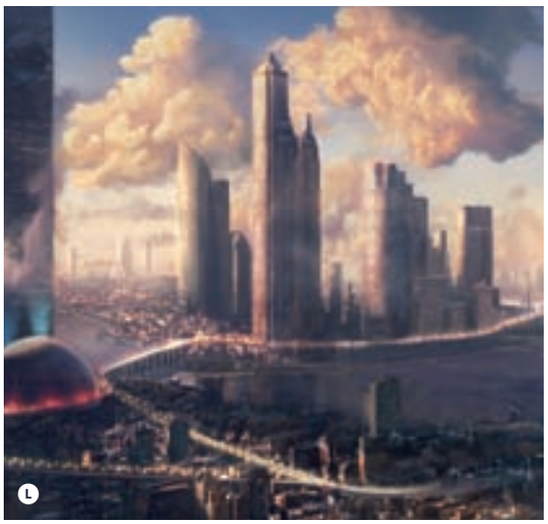
Jeep Planets **Vue 6, Maya, Photoshop (2007)**
These planets were created for the KNSK agency at Albert Bauer Studios to show the versatility of a Jeep on any terrain. I was responsible for the CGI creation of the planets

Montblanc Minerva **Maya, Nuke, Photoshop (2008)**
Montblanc commissioned Albert Bauer Studios to create a virtual clockwork of the Minerva Watch to fly through in several animations. I was responsible for shading, lighting, rendering and compositing

Audi Car **Maya, Photoshop (2008)**
This is an Audi Q7 rendered for photo agency MAGROUND at Albert Bauer Studios. My job was to do all the CGI and a part of the retouching in Photoshop

Creating the sky

How the sky was developed in the process of this painting



L These were clouds added early on, which lacked depth, integration and detail

M This shows slightly modulated clouds with a more detailed mid-ground city

N The start of the final sky composition with another concept idea added on top of the painting

12 Basic clouds

The clouds seen here were the first ones that were added to the image. Most of them look like they were cut and pasted into the painting and lack depth and integration; however, a lot of recolouring and repainting was applied at this stage. Some more diffuse clouds at the horizon help to make the scenery look more believable, too L.

13 Modulate the clouds

Painting highlights gives more depth to these clouds but they still seem to be too evenly distanced, with a clear sky behind the front line of clouds, which seems quite unrealistic. At this stage, the sky and the whole image is tinted in a warmer mood. The streets are much more detailed now with a newly painted lighting onto the mid-ground buildings M.

15 minutes
Render time
Resolution:
4,200 x 2,000

Quickly adding detail

A great technique to add more detail to your painting may be to search for images with high contrast, like lit windows at night. Add them to your painting, using the Overlay or Screen blending mode. This way, I saved a lot of time when making the lights of the city. You can stamp things around to be even faster.

14 The final sky composition

New photographs were now added, which I shot in Nepal (you can find some of these on the CD). As they are taking up more space in the sky, they seem much more epic. Additionally, gentle colour changes help to create interest. The final stages of the sky follow in the final section. In this version of the piece, another concept is added on top of the half-finished painting. I decided not to use the hangar concept either, and kept the undisturbed panoramic view later on N.

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Fine detail and finishing off

How the finishing process developed the piece towards a better painting

O

15 Continue the sky composition

As the sky's composition is almost finished in this step, the whole image looks a lot less cartoonish and has a more realistic feel.

The lighting and colouring is still too dreamy in this version, but the direction starts to work. Details like the harbour piers and additional kicked highlights support this O.

16 Finalise the sky composition

In this step, the sky is completely filled up with a new composition of clouds that work a lot better. The contrast in this version creates a more balanced image, but also a darker mood that kills some ambient sky lighting details on the city and the effect of depth. The sun seems distractingly bright right now, but the overall composition is working P.

Compositing the layers

Layers were used extensively to be as flexible as possible in the process. I mostly used adjustment layers that I later grouped with the changed pixels and duplicate. Then the duplicated group is merged and the old group is turned off visually to have a Photoshop file that's easier to handle.

P

O Here, we are starting to get somewhere with this painting

P A high-contrast version of the cityscape with a bright sun

Q It's getting too saturated and monochromatic in this rather flat version of the painting

R The final cityscape painting with the final touch of colour variation and details

17 Later that day

When working for too long on a painting without a pause, you get that tunnel vision that pushes you further into a saturated colour scheme. This red sunset version with too few highlights almost looks monochromatic compared to the previous version and the final image. The ambient skylight painted onto the big clouds gives more depth nonetheless. Some little perspective corrections and the mid-ground city extension make the panoramic view complete Q.

Q

R

18 Final cityscape painting

And here is the finished painting. Opening some parts of the sky again gives more colour variation and a more friendly mood. One of the most important final tweaks is the desaturation of the reds in combination with a bigger variety of colours and more ambient skylight details on the buildings' roofs and clouds R.

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I made this...

Incredible 3D artists take us behind their artwork

Artist info

Gerardo Damian Barbero

3DArtistonline

Username smooth-criminal

Personal portfolio site http://smooth-criminal.cgsociety.org/gallery/

Country Argentina

Software used 3ds Max 2009, V-Ray, Photoshop

> The scene has one Omni light and an HDRI map for the lighting and reflections

> I used standard box modelling and the TurboSmooth modifier, then added small details like joints of the body and others with the use of Displacement maps

Software used in this piece

3ds Max 2009 | V-Ray | Photoshop

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Speed Demon
2009

At the beginning of this composition, my idea was to make only the car, but later I decided to make a background to go with it. In this particular case, I wanted an old street. I used the same box modelling method for this as I used for the car.

“The rendering was done separately – one for the background and one for the car – to have more freedom to adjust the final image in Photoshop. I also made an Ambient Occlusion pass”

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Step by step: Create a rural scene

Winter Flock 2009

> As it's winter, one artist in particular stands out for me, and that is Joseph Farquharson, who painted some wonderful snowy rural landscapes back in the late 19th and early 20th Century

Dominic Davison specialises in rural 3D environments and landscapes

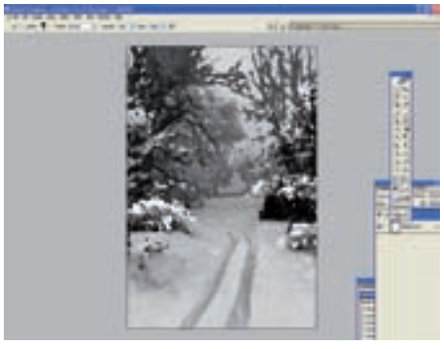
I wanted to create a 3D scene based on a fine art painting, as I get a lot of inspiration from this kind of work. As it's winter, one artist in particular stands out for me and that is Joseph Farquharson, who painted some wonderful snowy rural landscapes back in the late 19th and early 20th Century. His scenes tended to follow a similar path, using animals (particularly sheep), and the setting was usually early morning or evening.

This tutorial is an overview of the main steps taken to produce the final scene. This includes the layout of the terrains and trees, the use of Poser to create the sheep, dog and farmer and, finally, Photoshop to paint in the snow and the final postproduction work. Most of the scene was built pretty quickly in Vue. The biggest challenge was to get the right atmosphere and light settings in Vue. The use of Global Radiosity was key in getting the snow textures to look realistic.

Concepts

Classic source material

01 **As always, the** first step is to get reference material. As we are focusing on one artist, there wasn't any need to spend hours searching for photographs all over the internet. Instead, I instantly found a website dedicated to Joseph Farquharson showcasing his work.



02 **I usually start** off with a sketch of what I intend to create. It needs to be faithful to the original work, so it is just a matter of drawing or painting elements from one of the reference paintings. The one entitled *The Sun Had Closed The Winter's Day* will be used as the main source.

03 **Next, we need** to gather all the 3D models required to build the scene in Vue. The trees, gate and fence are from **www.cornucopia3d.com**. The farmer is a default model found in Poser called James, the sheep are created by Dark Anvil and the dog from **www.daz3d.com**.

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Step by step

Easy-to-follow guides take you from concept to the final render

Artist info

Dominic Davison

Personal portfolio site http://cggallery.itsartmag.com/gallery/dom1/

Country United Kingdom

Software used Vue, Photoshop, Poser 6

Expertise Dom creates rural 3D environments and landscapes

Software used in this piece

Vue | Photoshop | Poser 6

Posing, Composition, Lighting

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Artist Showcase

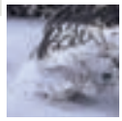
Dominic Davison

I have been a freelance digital artist for around five years, and primarily use Vue to build my scenes. I have designed book and magazine covers and am currently looking to sell my renders as large prints. I am also in the process of turning my scenes into short animations.

Sunset Vue **Vue, Photoshop (2006)**
This was one of my early renders using Vue. It was an experiment using the lighting and atmosphere settings

Bucolic Dwelling **Vue, Photoshop (2006)**
This render uses the same point of view as *Sunset Vue*, but with daytime atmosphere settings and different objects

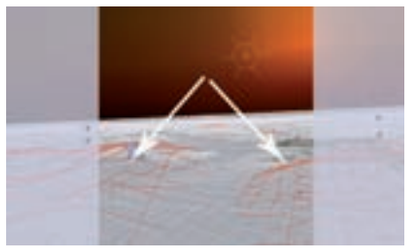
Rocky Mountain Lake **Vue, Photoshop (2008)**
This render was an entry into e-on software's annual 3D environment competition. I tried to use many different kinds of terrains to give the scene plenty of variety



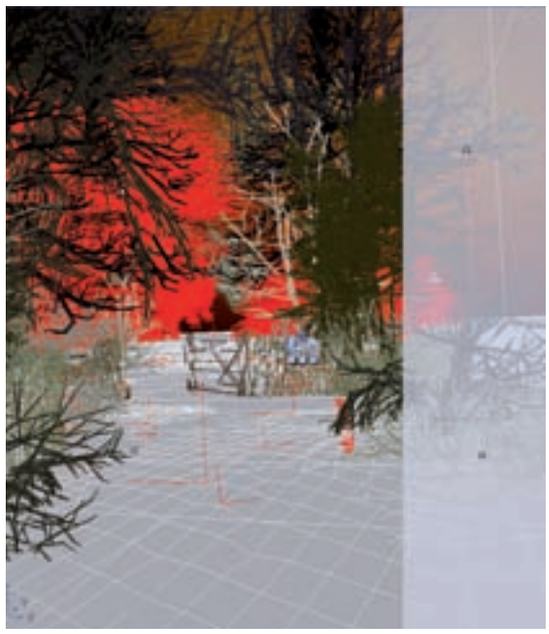
Creating the landscape

Setting everything up

04 **Open a new** scene in Vue. At this stage we are not concerned with atmosphere settings. Right-click the render icon and set the Aspect ratio to Standard PC – vertical (3:4). Now position the main camera above the ground level to a Z position of 69.



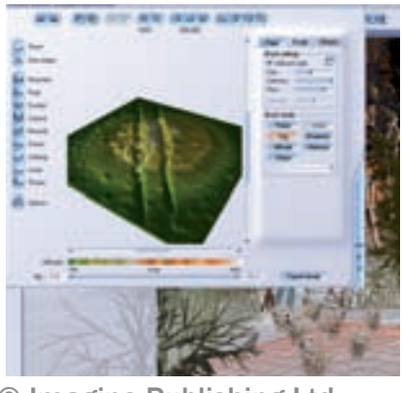
05 **Once you have** a model that looks fairly good with all the established proportions, it is time to make sure that the edge flow corresponds to the model's anatomy. The main reason for this is to make sure that your model is suitable for animation in the future.

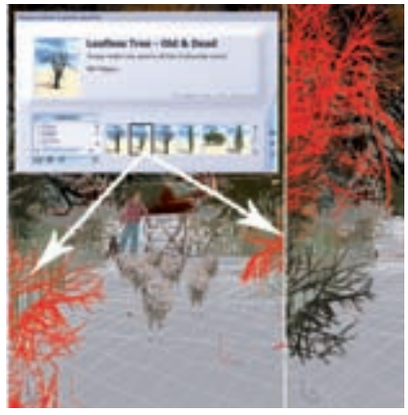


2 hours
render time
Resolution:
3,600 x 5,400

06 **Change the ground** to the default snow material, which is found in the landscape collection. Now select two standard terrains and position them close to the main camera but with space in-between, and change both to the snow material. Set Bump to 1.600 and Scale to 1.90.

07 **In the foreground,** I used the Leafless Tree – Old & Dead as the main tree on the left. This was positioned at a 45-degree angle. The Large Dead Tree and the Winter Tree A were placed on the right, with the Leafless Tree – Old and Dead placed in the ground on either side.





08 **Open a standard** terrain and double-click to edit. Now we need to create two tracks. Select Dig under Brush mode and move the Size slider about a third of the way up. Next, paint two deep tracks over the surface of the terrain.

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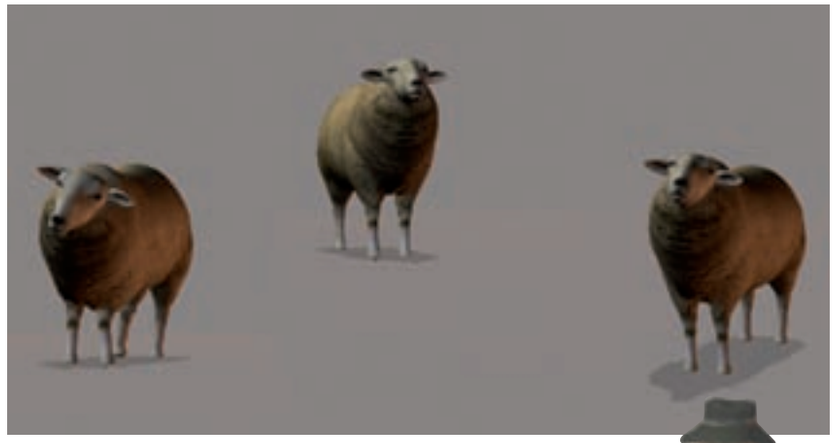
Adding the detail

Putting the sheep in place



09 **The sheep were** from Dark Anvil and in Poser format, so their poses could be edited. Once they were opened in Poser, I only changed the head pose slightly for each one so they would look slightly different in Vue.

Hurdles to overcome

The most time-consuming area of Vue, apart from rendering, is editing the lighting and atmosphere. Get this wrong and all your careful composition of a scene will not be shown in its true light. There is a balance to be made as to whether or not you want quality or time. Because Vue is best at producing realistic-looking landscapes, using Global Radiosity will generally make scenes look more realistic. The downside is it will increase render times. One way around this is to reduce the Sky Dome lighting gain and Quality Boost setting.

10 **The farmer was** created using the default model of James Casual. The character then needs to look like he is closing the gate, so the right leg and the left arm were pulled back. The dog used the trot pose.

11 **I then selected** the conforming jacket from the James clothing section and the conforming baggy jeans. The farmer's hat was a freebie from Elke found at Renderosity's marketplace. The dog was from the Millennium Dog collection found at **www.daz3d.com**.

12 **Once you have** posed the sheep and brought them into Vue, we need to gently place each one so their feet are lowered about an inch into the snow. The group of sheep were positioned in a diamond formation, fairly close to each other and at slightly different angles.

13 **Place the farmer** near to the open gate with the left hand appearing to close it. Resize in proportion to the surroundings and do the same for the dog.

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Atmospherics and snow

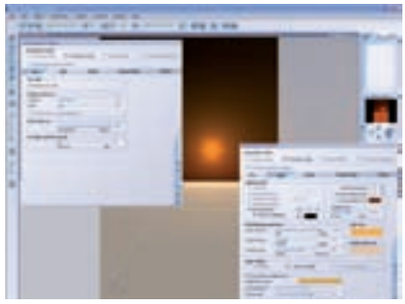
Making it look good

14 **At this stage,** we have all the objects in place and are ready to change the atmosphere and lighting. I started off with a standard atmosphere but after some tweaking found that Global Radiosity was needed to bring out the detail in the snow texture.

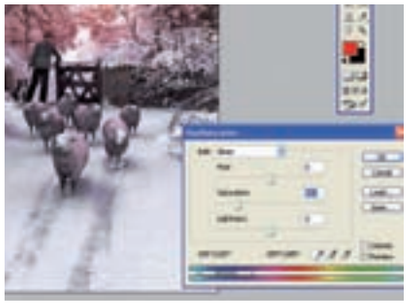
Postproduction

Photoshop is vital in terms of getting the final 3D render looking even better. Vue does most of the hard work in terms of the composition of the scene and the atmosphere settings. I like my renders looking like fine art paintings and so don't always like the very clean-looking photographic renders that Vue can achieve. So this is why, when it comes to a winter scene, I tend to use a 2D application such as Photoshop to give the scene that painterly feel. I also use the Dodge, Burn and Saturation tools, which are far more flexible and easier to use in Photoshop.

15 **Change the atmosphere** model to Volumetric. In the Sun tab, set Azimuth to 100.3 and Pitch to 9.79. In the Light tab, set the Lighting model to Global Radiosity with Indirect skylighting. Set Light Intensity to 1.50, Light Balance to 17% and Ambient Light to 50%. Change the Overall skylight color to whatever you prefer.



16 **Next, we need** to paint in the extra layers of snow. Open the finished render in Photoshop and choose a Chalk brush, then select a Dual Chalk brush in the Brush Presets. Select Scattering and set it to around 200%. Now start brushing over the surfaces of objects such as the fences.



17 **Next up, choose** Image> Adjustments>Photo Filter. Select Cooling Filter (82) and set it to 10%. Now select Hue>Saturation and choose Blues from the drop-down edit menu. Reduce Saturation to around -60. This will reduce the saturation of the snow and bring out the warm colours of the sun.

18 **Finally, to bring** out more of the detail in the trees and leaves, select the Sharpening tool and choose a small, hard-edged round brush. Change the blending mode to Normal and Strength to 7%. Now start sharpening specific areas in the foreground, such as the snow-covered trees.

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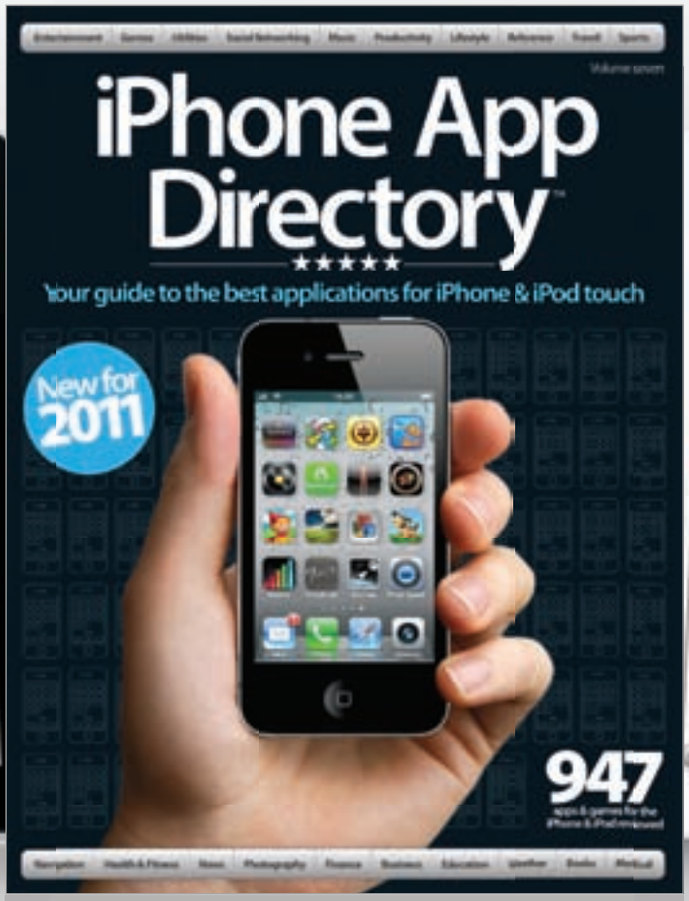
It's a jungle out there. Swing through it

iPad



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I made this...

Incredible 3D artists take us behind their artwork

Artist info

Benoit Patterlini

3DArtistonline

Username noart

Personal portfolio site
http://noart1999.blogspot.com/

Country France

Software used LightWave 9.6, Maxwell Render 2.0, Photoshop

Candy War
2009

Everything is modelled with LightWave. I created the background with LightWave and added the vegetation with Photoshop. I drew the trees on a paper sheet, scanned them in and colourised them with Photoshop.

> "I wanted a spectacular frame for the fighting so that it looked like a movie frame"

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"I lit the background with Maxwell Render 2.0 with just a sun and standard environment"

Software used in this piece

LightWave 9.6

Maxwell Render 2.0

Photoshop

"I rendered the image with Maxwell 2.0 and composed the final image with Photoshop"

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Step by step: Hold the textures

Rue de Paris 2009

"The original concept simply came from an idea I had to create a simple model with plain lighting, and especially pastel colours rather than detailed textures"

Matthieu Roussel specialises in character design

Step by step

Easy-to-follow guides take you from concept to the final render

Artist info

Matthieu Roussel

Personal portfolio site www.mattroussel.com

Country France

Software used CINEMA 4D, ZBrush and Photoshop

Expertise Matthieu likes to design characters and new universes, while he is always looking for new 3D experiences

Software used in this piece

CINEMA 4D | ZBrush | Photoshop

In this tutorial, I will explain how I modelled the main character and the different elements of the background. Then I'll go over the texturing, the lighting and finally how the final image was composed with the different renders. The original concept simply came from an idea that I had to create a simple model with plain lighting, and especially pastel colours rather than detailed textures. Most important of all was to give the scene a Parisian feel with a typically French mood, using the stereotype of a fashionable girl shopping in a Paris street.

Modelling, Composition

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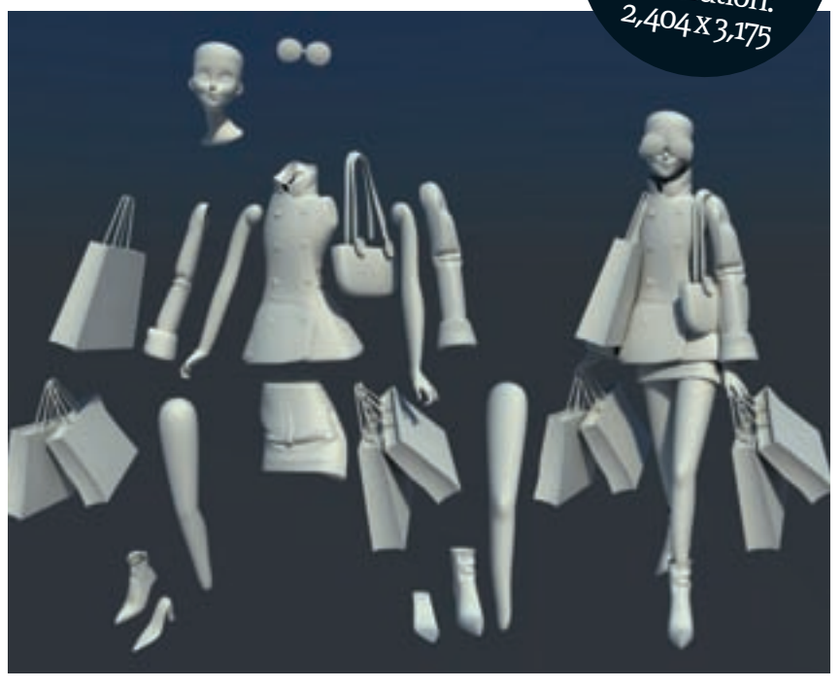
Creating the figure

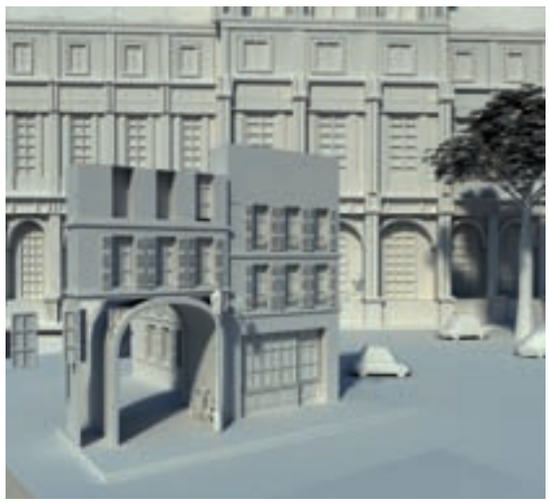
Start from a basic cube

01 I modelled the head very basically, starting from a cube. I didn't model the eyes or the hair, as I intended to draw them in Photoshop later on. I spent time modelling the lips and the nose of the character in particular to give her a true 3D aspect.

02 After modelling the head, I started modelling the body. I proceeded as though I was creating a doll, modelling each part of the body from a cube and then assembling them in the right position.

10 minutes **render time** Resolution: 2,404 x 3,175





03 The background is made from pieces of architectural elements that I had made for different illustrations. I modelled only what I needed, so I didn't lose time in details that wouldn't be visible in the final illustration, ie the roof of the building.

04 After modelling the background, I fixed the camera and adjusted the angle of it. At this point I had a good idea of how the scene was going to look, so I started fixing the lighting as well. The concept called for very simple lighting, which is why the only source of light is the sun.

05 The most difficult thing to achieve was to create the pastel colours. Most of the time I actually like the renders when they come out in black and white, as it highlights the interaction between shadow and light. This contrast and style is often overwhelmed once colour is introduced. So, for this image, I assigned simple textures to the models and used very soft pastel colours.

06 I then produced different renders and composited them in Photoshop. I created a render with Alpha channels for the two characters. I then output another render of the entire scene and blurred it a little to give some depth to the image. The various renders were then composited in Photoshop, and I drew on the hair and eyes for the girl. The graphics for the bags were added in separately using a Photoshop layer with the blending mode set to Multiply.

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Cloning, Shading, Painting

On the Disc

Have a go at painting over 3D yourself. On the disc are the model and background:

3d base.psd
background.tif
pendant design.psd

behind the scenes

3D artists explain the techniques behind their amazing artwork

Artist info

April Madden

Personal portfolio site www.digitalartistdaily.com

Country UK

Software used Corel Painter X, Adobe Photoshop CS2, ArtRage 3, SketchBook Pro 2010

Expertise April is a graphic artist and deputy editor of our sister title **Digital Artist**. She specialises in Corel Painter but also uses Photoshop, ArtRage and SketchBook Pro

Software used in this piece

Corel Painter X | Photoshop CS2 | ArtRage 3 | SketchBook Pro 2010

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Turn 3D into a painting

The Lioness 2009

Transform a basic 3D render into a lavish full-colour painting using the unique tools in Corel Painter

April Madden is the deputy editor of Digital Artist and specialises in Corel Painter, but also uses Photoshop, ArtRage and SketchBook Pro

Concept

Early on in the lighting study process, I thought that the shape of the model's shoulders, stance and the background she was put in suggested a classic fantasy warrior woman.

If you hanker for something a little different from standard clean and shiny model renders, then why not knock out a basic render and paint over the model to introduce different textures and colour variation. We started this tutorial with a DAZ Studio girl and background which was output in hi-res. These are on the disc for you.

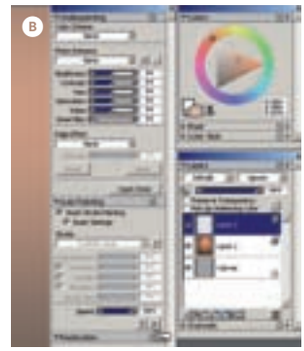
To get a portrait started quickly in Corel Painter, use the Cloning tool. Cloning can be problematic if you start with an image with heavy make-up – it makes details and tonal values impossible to pull out. With a fairly plain model, you can use Painter's Autopainting function as a quick route to a value study (a rough version of the image in monochrome, with the lighting laid out in blacks, greys and whites). From the value study, you can use different layer Compositing modes and opacities to build up colour and details in glazes. This approach, called indirect painting, has been used since the Renaissance to achieve deep shadows, glowing colours and bright highlights. If you're not confident about painting details like eyes and lips from scratch, Painter's Cloning brushes can be used to add them in giving you a 3D model combined with the creative possibilities of painting.

01 Prime your canvas

To begin, go to File>Quick Clone and clone the image. Turn Tracing Paper off and set the canvas colour to a neutral, desaturated grey tone. Next, make a new layer, fill it with a warm reddish brown and use Effects>Apply Lighting to add a light source. Now reduce the layer's Opacity to around 50%. This gives the effect of a traditional imprimatura priming surface A.

02 Autopainting

Make a new layer and go to Window>Show Autopainting. Tick Smart Stroke Painting and Smart Settings, then select a brush. I prefer the Tinting>Basic Round brush for its simple shape and colour coverage. Set it to Use Clone Color, and hit Play in the Autopainting dialog box. This gives you a quick way to rough in lines and tones B.



02 Autopainting

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Underpainting

Block in tones and shades using opaque colours

D Verdaccio is a Renaissance technique for creating an effective skin tone. It looks a bit odd, but is worth using

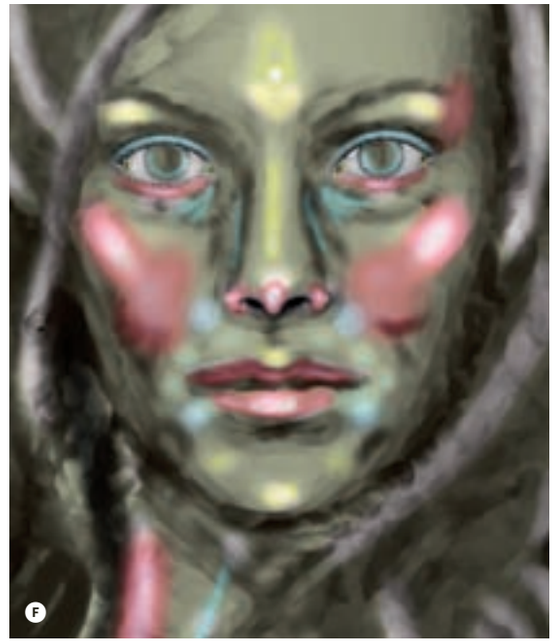
E Grisaille is a type of underpainting you can use for almost anything. Here, I've started drawing the character's clothes in grey tones

04 Verdaccio

Make a new layer and fill it with a fairly dark, dull khaki green, then set its Compositing mode to Gel and reduce its Opacity to around 65% so the tonal gradation can be seen clearly through it. Reduce the Opacity of the layer beneath to around 80% so the warmth of the canvas colour and lighting shows through. Erase the green from everywhere except the hair and flesh. This is verdaccio; the Renaissance technique for underpainting skin. When used with coloured glazes, it creates perfect shadows and makes skin tones look fresh and more realistic D.

05 Grisaille

Grisaille is another type of underpainting, which is done in greys. It's good for anything that isn't skin or hair. I've used a Fine Tip Soft Air airbrush to start creating the character's clothes, using dark greys and blacks for the shadows, mid-greys for the midtones and pale greys and whites for the highlights. It's better to use around five shades of grey rather than a basic dark, mid and light. I've used these tones to create depth on the bodice and start modelling a V-shaped armoured bracelet E.



06 Underlying colours

On top of the verdaccio layer, take the F-X>Glow brush and highlight areas that will bounce back light in different ways. Red areas are where arteries and capillaries are close to the surface, causing it to flush – the cheeks, temples, tip of the nose, carotid artery in the neck and, of course, the lips. Blue areas show where veins are. Mostly blue is used around the chin, but keep it subtle in female subjects. Also, use it around the eyelids – think of where blue eye shadow would be applied. Yellow is plane light: the scene's illumination catching on extremities F.

F Use Painter's F-X>Glow brush over the verdaccio layer to create areas where light will bounce back in different colours

G Start to block in the skin tones using the custom brush outlined in the step above

07 Skin tone

Here's a custom brush that's perfect for skin tones. Take the Thick Blossom Sumi-e brush and set it to 9% Opacity, 43% Resat and 66% Bleed at the top of the program window. Now go to Window>Brush Controls>Show General and choose Dab Type: Static Bristle, Method: Cover and Subcategory: Soft Cover. Finally, go to Brush Controls: Color Variability and select From Gradient. Choose the Water Lily Flower gradient from the Gradients palette, and block in all skin areas on a new layer, leaving the very darkest parts of shadows G.

Problems and solutions

3D models are often very precise. People themselves aren't – they're a little asymmetrical, a little bit wonky. Creating a human character from a basic render means that you need to do more than simply clone in details. You need to make the image feel like a painting of a character.

Observation is key when it comes to adding life to an image. Look at your friends and family; notice how a smile may curve slightly more at one side than another, or how a raised eyebrow suggests an expression. Watch how the amount of light the eyes bounce back in 'catch lights' changes with someone's mood, thanks to their pupils dilating or contracting. All of these tiny visual signifiers make a face what it is. If you don't incorporate them, you run the risk of your image falling into the uncanny valley, where it looks so precise and perfect that it's slightly unsettling.

Using low-opacity glazes of colour is the most subtle method of building up these unique little quirks. You can place them exactly where you need them and alter their shading and colour as much as necessary. And if you get it wrong, they're easy to delete without losing too much progress.

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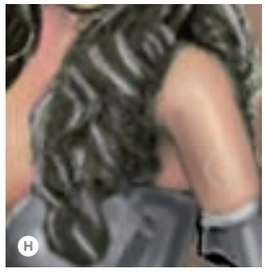
Applying colour

Start glazing colour on low-opacity layers



H Duplicate the skin tone layer; adjust both layers then drop all of them and start to lightly blend the skin tones in small strokes

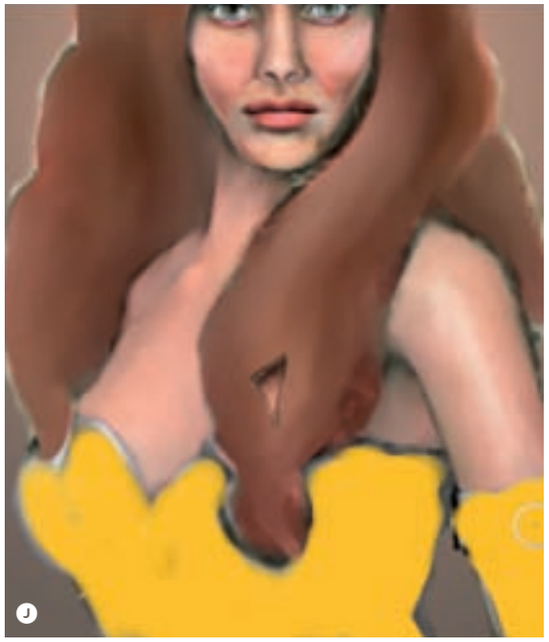
08 The first blend

Duplicate the skin tone layer. Set one copy to Colorize to create a rich peachy pink tone. Leave the other in Default mode. Lower the Opacity of each to around 35% (play with these settings to suit your own requirements). You'll start to see a basic build-up of flesh tones over the lower modelling. Save and drop all layers. Now take the Just Add Water blender at around 20% Opacity. Use it to blend areas of colour into each other in small, scrubbing motions H.

09 Hair colour

Take the Tinting>Basic Round brush and set it to Use Clone Color. Run it over the hair. Again, duplicate the layer once or twice and adjust the Compositing modes to create the colour and tone you want. I've set the top layer to Colorize to create a red tone, as I was asked for a red-haired subject I.

I Block in the hair tones using the Tinting>Basic Round brush, and experiment with layer Compositing modes to achieve the basic colour you want



J Golden tones have a lot of black and white in them, so make use of the Colorize Compositing mode over monochrome to get a basic gold

10 Clothing colour

Do the same for the clothing. I wanted to create golden armour, so I picked a bright, warm yellow. Gold is a bit of an odd colour – it's got a lot of black and white, and even hints of green in it. To create an effective gold, I set the clothing colour layer to Colorize over the grisaille underpainting, creating a basic antique gold tint with shadows and highlights already present J.

K An extra note of blue is added in to form an inverted isosceles triangle with the model's blue eyes, drawing attention to them

11 Enhance the clothing

The character in this painting has very blue eyes, so to anchor those in the composition another touch of blue is needed in a place where it will form a strong shape with them. Setting a blue jewel in the middle of the bodice forms an inverted isosceles triangle, which will draw attention to them. Here, I've drawn a simple diamond shape with the Variable Chalk brush, incorporating some basic highlights. All the blue tones are colour-picked from the eyes of the original 3D model. I've also added some metallic highlights to the clothing with the Glow brush K.

Painting hair

When painting from a 3D model, hair is often the least realistic part of the image, especially if it's curly. It looks fairly chunky and lifeless. I took the basic shape of the model's hairstyle from the render, but then extrapolated from that. First, I had been asked for a red-haired character, which required a quick dye job during the underpainting stage. Second, the model's ringlet hairdo looked distinctly static and didn't suit the character that had started to come out during the value study. To get around this, I plotted out the basic shadows, midtones and highlights in the hair and then painted it using Painter's Oils>Variable Flat brush set to Use Clone Color, with the image itself selected as the Clone Source. You don't need to paint every hair in a painting – in fact, it looks false if you do. So once you've got its basic shapes blended together, use a brush with visible, hairy brushstrokes and just stroke it down the hair as if you're actually brushing it. The Oily Blender at a very small size works brilliantly at the end of the painting to add a few natural-looking feathery tips and flyaway strands.

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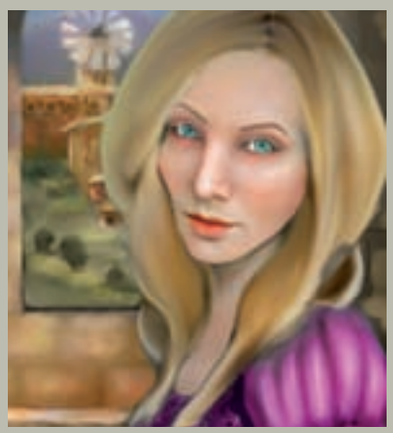
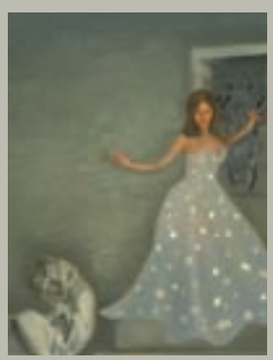
Artist showcase

April Madden

After studying Art History and Fine Art at university, I went into journalism and worked on a variety of technology titles before taking over the Official Corel Painter Magazine (and creating a fair bit of artwork for it). I now run 3D Artist's shiny new sister magazine, Digital Artist.

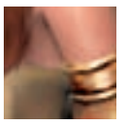


In Another Castle **Corel Painter X (2009)**
This is a work-in-progress. I'm not above a bit of fan art, and I wanted to explore what Princess Zelda would look like if she wasn't busy being imprisoned by the forces of darkness and managing the destiny of small fairy boys



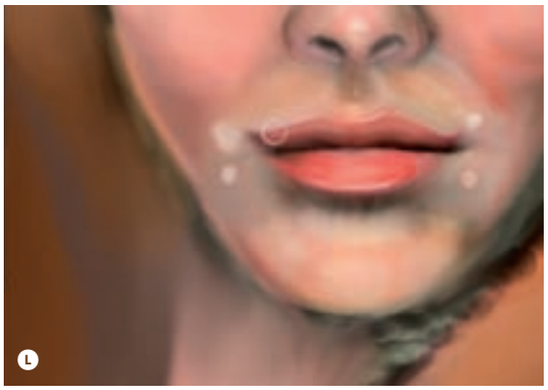
The Painted Room **Corel Painter X (2008)**
One of my daughter's favourite books is *The Tombs of Atuan* by Ursula Le Guin. This is a key scene in the book, which is mainly set in an underground labyrinth

Winter Sea **Corel Painter X (2009)**
This was done for the Official Corel Painter Magazine to demonstrate how to use Painter's Esoterica toolset effectively. Apart from the clouds, which took several hours of blending by hand



Working up details

Use Cloners, Blenders and colour to make the details crisp



12 Model the face

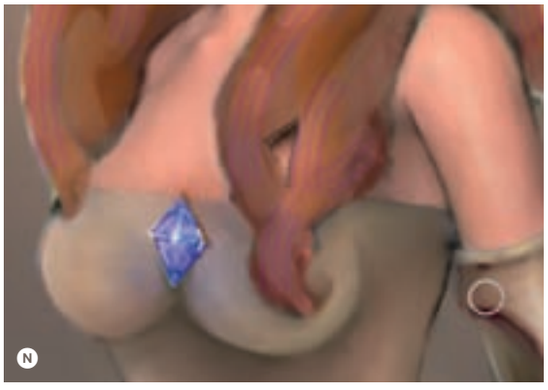
I used another custom brush to model the shading of the face. It's perfect for blending in areas where you've cloned in detail on a new layer, too. Take the Acrylics>Captured Bristle and set it to 100% Opacity, 38% Resat and 10% Bleed. Go to Brush Controls>Show General and change the Dab Type, Method and Subcategory to Static Bristle, Cover and Soft Cover respectively. Set the Color Variability to From Gradient again. I used the Tropical Fruit gradient here. Feather from the darkest inner point of a shadow to its outer edge and slightly beyond in little wispy strokes L.

13 Making up

With the facial expressions blended, it's time to add some cosmetic colour. Despite the warmth of their hair (or perhaps because of it), redheads look their best in cooler colours. On a new layer I used a Fine Tip Soft Air airbrush to glaze a pinky tone (colour-picked from the original render's lips, then darkened and saturated by choosing a variant from Painter's Colors palette) to the cheeks and over the lips. The airbrush gives a soft, semitransparent, diffused effect, which is perfect for make-up M.

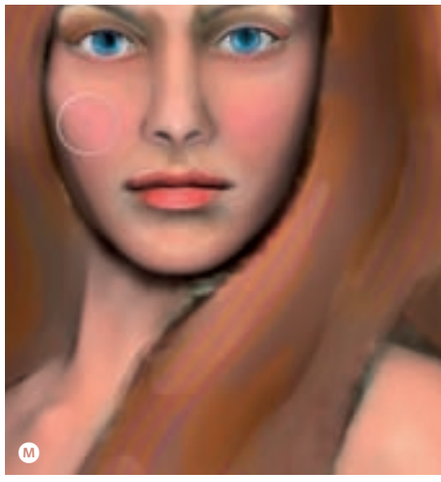
14 Refine the clothing

I blended down the metallic tones I applied to the character's clothing and started to refine the modelling on the bodice and armband using the Just Add Water blender. I also drew on the upper part of the armband using Oil brushes, which are great for creating shiny metallic effects N.



Verdaccio

Why the green underpainting? Green is the opposite of pinky peach – its 'complementary' colour. When put together, both pop out visually. Using green for shadows and undercoloured glazes is a 500-year-old technique for making skin look fresh and alive. It also dulls down any unrealistic orange or reddish tones that make the skin look fake.



12 hours painting time
Resolution: 3,000 x 4,000

L Use the custom blending brush to feather shadows and highlights to model the facial expression

M Add make-up subtly using Airbrushes, which are semitransparent, letting the skin tones and shading shine through

N Start to refine the clothing with some subtle blending using the Just Add Water brush

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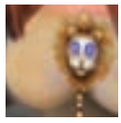
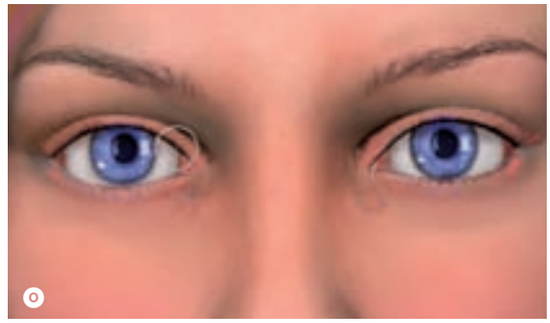


Fine detail and finishing off

Fix the details and add last-minute changes

15 The eyes have it

Using a mix of Cloner brushes with the original model as the Clone Source and Airbrushes with tones picked from the skin, refine the modelling around the eyeballs and eyelids. Remember that eyeballs are round; they're darker at the edges and brighter at the parts nearest the eyes. The irises effectively float over them, picking up the same shading, and the eyelids will cast shadows on both. Set a layer to Multiply and airbrush a soft shadow tone across the tops of the eyeballs, beneath the eyelashes. Use a pale grey to create catch lights in the iris and pupil O.

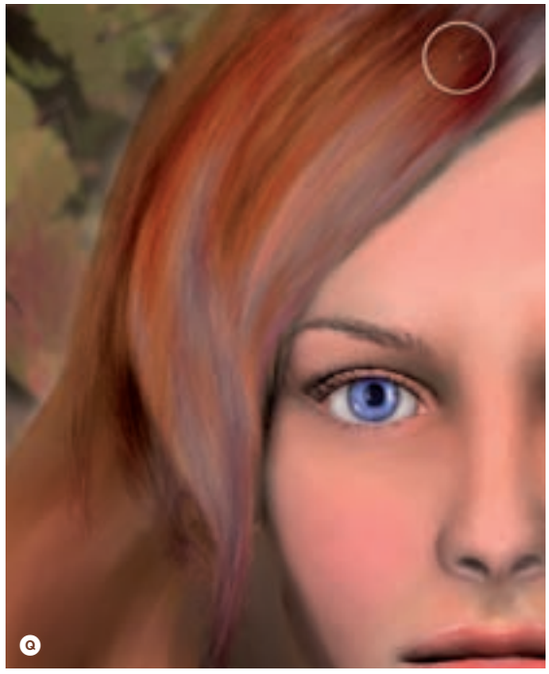


O Eyelids cast shadows over the eyes themselves. Set a layer to Multiply and airbrush a soft shadow tone just under the lashes

16 Clone in the background

Save, then open Painter and your painting again. Open the background image. They should both be displayed at the same size; don't change this for the moment. On the background image, go to Effects>Tonal Control>Match Palette and choose the painting as the palette to match the colour tones to. This will unify the background with the painted model. Back in the painting, set the Clone Source to the background image. Use the Soft Cloner on a new layer to add in the background. Reduce its Opacity to around 70%, drop, and use the Blur blender to fade it into the background P.

P Clone in the background on a new layer, reduce its Opacity so the lighting shines through and then blur it



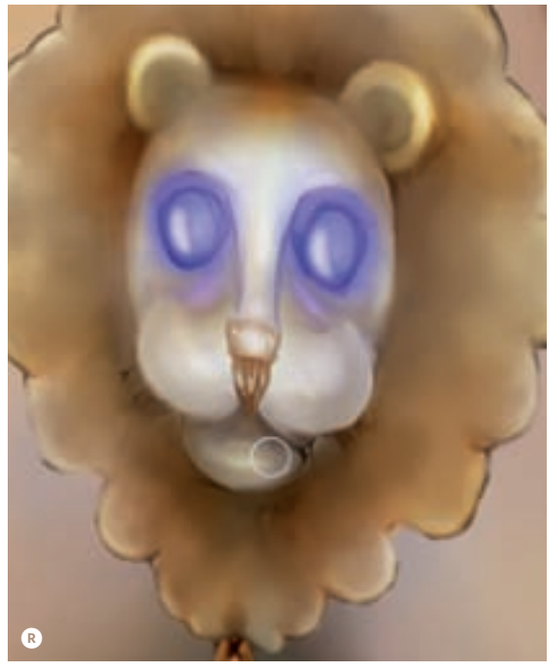
Q Choose a brush with visible bristles at a reasonably large size to paint the hair without having to draw each strand

17 Detail the hair

Hair in 3D models can often be unrealistic, so up until now I've left it as a basic block of shaded colour. To create the look of hair without painting each individual strand, pick the Oils> Variable Flat brush, which shows its individual bristles with each stroke. Set your Clone Source to your painting itself and, on a new layer, drag it down the hair, literally as if you're brushing it. Keep going until the hair looks right – it's a time-consuming step! Q.

18 Last-minute changes

Taking a look at a composition you think you've finished often results in some last-minute changes. At this stage I decided that the bodice jewel is too big and chunky, so I swapped it for a more stylised pendant that I've drawn (this is on the disc for you to use). I placed it in the painting by copy and pasting it and using the Layer Adjuster to move it around. Finally, I dropped the layer and blended the pendant design down with Just Add Water R.



R Use the pendant design on the disc to add a more decorative element to the clothing

Compositing the layers

Building up glazes on low-opacity layers is a great way to create colour over strong tones, but one of Painter's greatest strengths comes in the form of its Blenders. These, however, work best on the canvas itself. This means that you need to build up your coloured glazes, save, drop the layers and then blend. This is also the reason I chose to work on the portrait separately before finally adding the background – so I didn't muddy details of it by blending edges too early.

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3DArtist

Masterclass

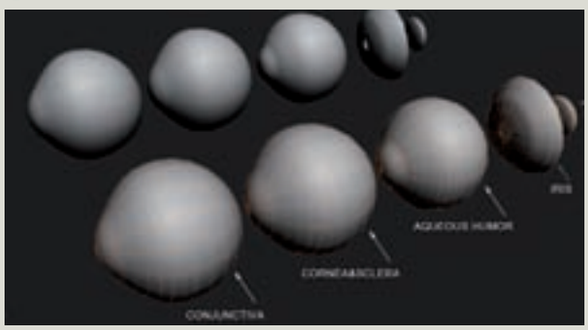
Joe Harford kicks off a new series for the more experienced 3D artist, with a look at how to create realistic-looking eyes

The eyes have it

> We've all seen images where CG characters aren't believable, sometimes even dead-looking. Although this could be because of textures, shaders or even the environment, more than likely it's because of the eyes

It may sound clichéd, but eyes really are the window to the soul. We've all seen images where CG characters aren't believable, sometimes even dead-looking. Although this could be because of textures, shaders or even the environment, more than likely it's because of the eyes. This is true for other creatures, such as dogs, fish and aliens, too; there's a certain depth and feeling that is essential to any lifelike and realistic character, and this depth starts with the eyeball.

A



Although eye shapes vary based on species and individual, the design of the eyeball is pretty similar across the board. Once you create a set of realistic eyeballs, you can reuse them for all your characters. They have the added bonus of tricking the viewer into assuming realism at a glance, meaning less work in other areas if you're on a tight schedule.

The first objective with any project is to research it in depth. Go online or to printed books and find out how the eye works, how each part looks and how to create it in 3D.

Once you have a good set of reference images and knowledge of how the various parts of the eye fit together, the best approach is to model each of the following components separately:

sclera (the white of the eyes)
cornea (coating covering the iris, pupil and anterior chamber)
aqueous humour (watery substance filling the anterior chamber)
lens (a transparent, spherical structure that sits behind the pupil)
conjunctiva (clear membrane that lines the inside of the eyelids and the eyeball)
iris (the coloured part of the eye)

Creating these parts and giving accurate IOR (index of refraction) values to their transparency will allow us to create depth in the eye. The iris will deform correctly from the front and side angles, and bring about more realism than a simple textured sphere would do.

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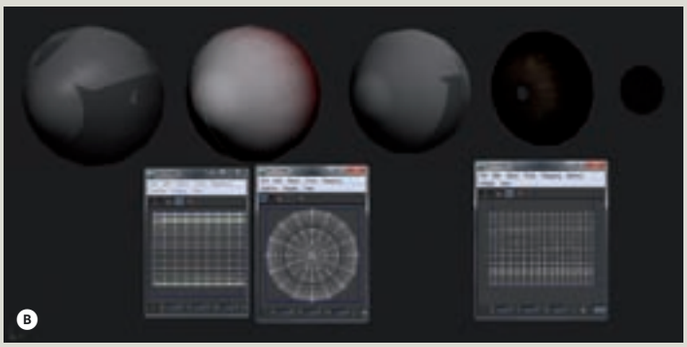
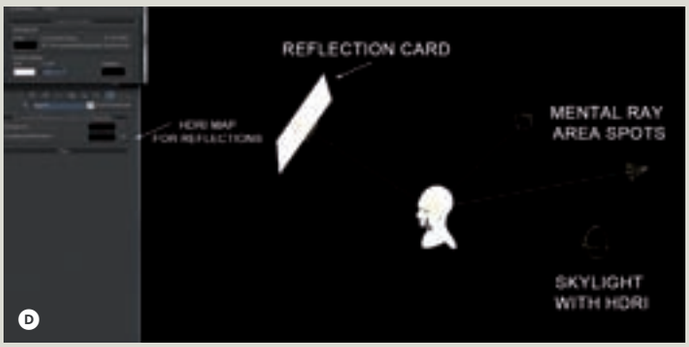
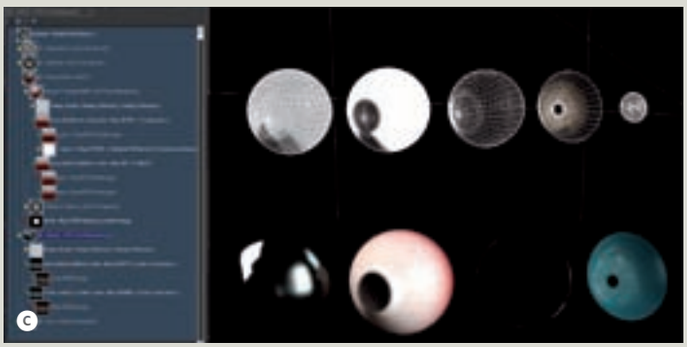






Often people create eyes that look too bright, which is a dead giveaway when spotting realistic images. Eyes pick up colour from their surroundings, but they can be textured with a 60% value, tinted slightly red.

Another thing to watch is the shape of the eyeholes. Eyes are not simply slits in the skin where spheres poke out, they have volume and form and it's important to observe how they look rather than modelling based on assumptions. Eyelids wrap around the eyeball in places and are thicker than you may think. The upper eyelid is thicker than the lower and hangs over it slightly. The eyeball is also not placed dead centre, it should be positioned centrally, moved up about one centimetre and then rotated down. If you already have the eyelid overhanging, it should fit snugly with no gap after making this change.

Also, don't forget to model the lacrimal caruncle, which sits in the corner of the eye nearest the nose. It's important to include this and make sure its membrane covering looks like it's attached to the eye.

01 Modelling

Model the pieces that make up the eye. It's important to model each of these pieces with pinpoint accuracy so the refractions work correctly. Things to note are the nonspherical shape of the eyeball, while the front of the eye where the cornea is should be bulbous. Also, the iris should be slightly convex and have a hole in it for the pupil. You can create a morph target to control the size of the pupil A.

02 Texturing and mapping

Unwrap and texture each part separately. If you create the iris from a cylinder, the texture painting will be much easier. The sclera should go from red to white (although not too white) and include small blood vessels. Make a square texture with a slightly blurred circle in the middle for the cornea. Create a new Planar Unwrap for this, as UV channel 2. Create the other textures procedurally or use simple shaders B.

03 Shaders

Texture the sclera with an SSS-based shader with no reflection and a small Bump. Place in a blended material with a transparent shader with IOR at 1.38. Mask the two using the Circle map. The aqueous humour uses the same material but IOR at 1.33. Use a reflective transparent material for the conjunctiva, enough to highlight bright parts of the environment. The iris is SSS-based. Use a texture with a slight Translucency and Bump. The lens uses a transparent shader C.

04 Environment

The eyes have to have something to reflect to look realistic, and using a HDR can be a quick way to achieving good-looking reflections. You can use lights, but often it's preferable to create reflection cards to design your eye reflections. You can even create a reflection texture to visualise the reflections on the eyeball, and then blend it with environment reflections so you still pick up the reflection of the eyelashes D.

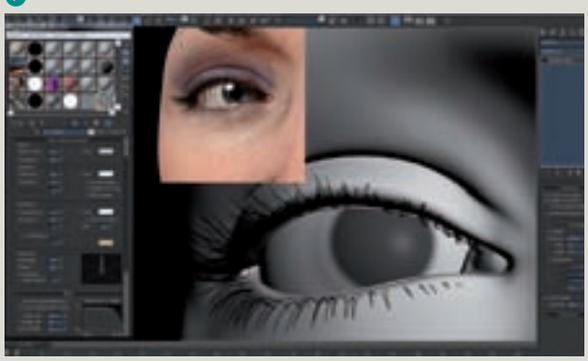
05 Extras

To supplement our realistic eyeball setup, it's important the surroundings are also realistic. Eyelashes must be created that look authentic and attach to the skin in the right place. Where the eyeball meets the skin, it must be more pink, more translucent and pick up more reflections or specularity. Make sure the upper eyelid and eyelashes are casting soft shadows down onto the eye. This shadow adds a huge amount of realism E.

06 Finishing touches

There are some final tricks to improving the realism further. Select a ring of edge loops where the eyeball meets the skin and convert it into a spline. Make the spline renderable or give it thickness, and give this a transparent, high-reflection material to give highlights of wetness around the eye. With these tips and tricks, you should be on your way to creating more realistic eyes and characters than ever before F.

F



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Your questions answered?

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The Advisors

Maya
Lance Hitchings
www.hitchingsdesign.com

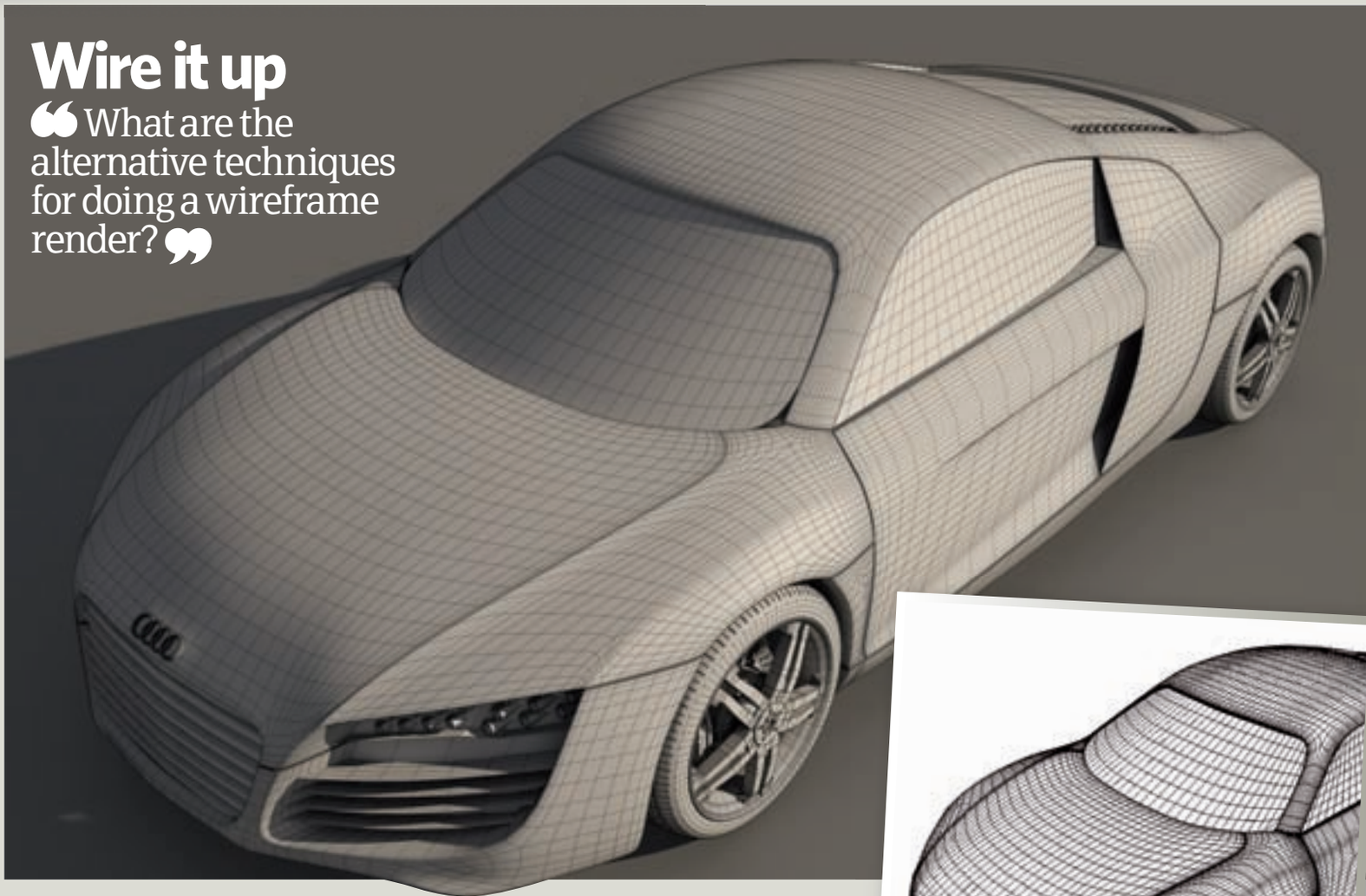
Lance is our Maya master, and in this issue he discusses alternative techniques for wireframe renders in the modelling software

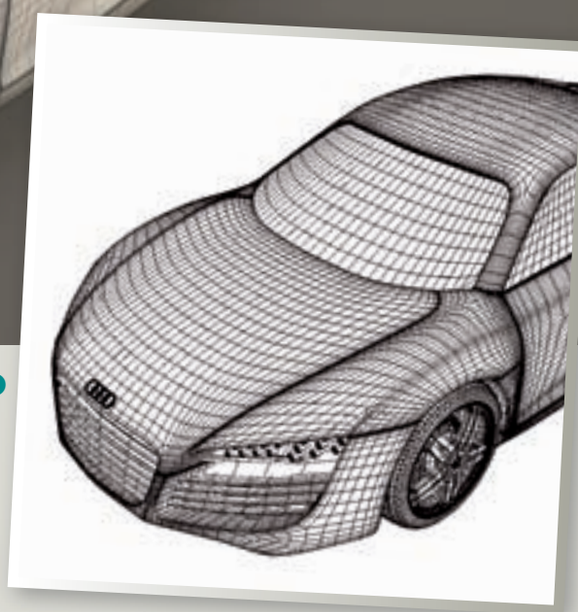
3ds Max
Ryan Knope
info@ryanknope.com

Ryan is our architecture and 3ds Max expert. In this issue, he comes to the rescue with nonstandard building materials

Wire it up

"What are the alternative techniques for doing a wireframe render?"





Unlike 3ds Max, Maya has never really implemented a simple, high-quality method for creating wireframe renders. If you work in Maya then you'll need a workaround to produce a wireframe render, and there are several different approaches that you can use. We'll briefly examine a couple that are okay, and then look at a really good approach in detail.

01 Screengrab wireframe

First off, you can do a simple screengrab. Set your viewport background to white (Windows>Settings/Preferences>Color Settings), apply a white surface shader to your mesh, place your mesh on a render layer and set the render layer's colour to black. With your viewport set to Wireframe on Shader, you can do a screengrab or use the Snapshot button in the Render View. Either way, your image is not a true render and is going to be aliased A.

02 Vector render wireframe

Second of all, you can create a vector render. You'll need to enable the Vector Renderer (Windows>Settings/Preferences>Plugin Manager>VectorRender.bundle), then turn on Include Edges in the Render Settings. Set the colour to black, the Edge Width to Hairline and turn on Entire Mesh. The problem here is that the vector edges are applied to the tessellation that is produced at render time, which means that all of the quads are tessellated into tris. This method is also exceedingly slow, especially if you have a high number of polygons in the scene (this render took almost eight hours) B C.

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CINEMA 4D
Daniel Lovas
http://lovas.cgsociety.org/gallery/

Daniel is our resident CINEMA 4D specialist. Here, he describes how to get realistic sea water from the program that competes with dedicated landscape-generating software

Vue
Dominic Davison
www.3dartistonline.com/user/dom1

Dom is one of the top people creating realistic landscapes in Vue. In this issue, he explains the difference between various types of lighting

Poser
Paul Francis
www.3dartistonline.com/user/stormdraingfx

Paul is a former modeller for programs like *Red Dwarf*, and he is also an accomplished photographer. This month he looks at how Transparency maps can significantly aid modelling in Poser

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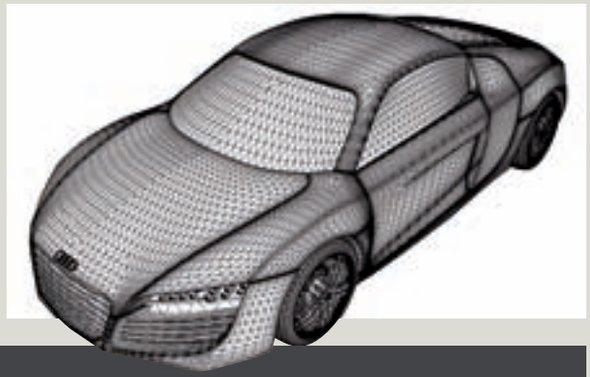

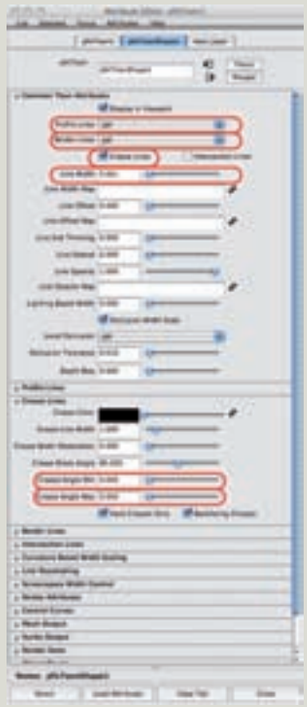

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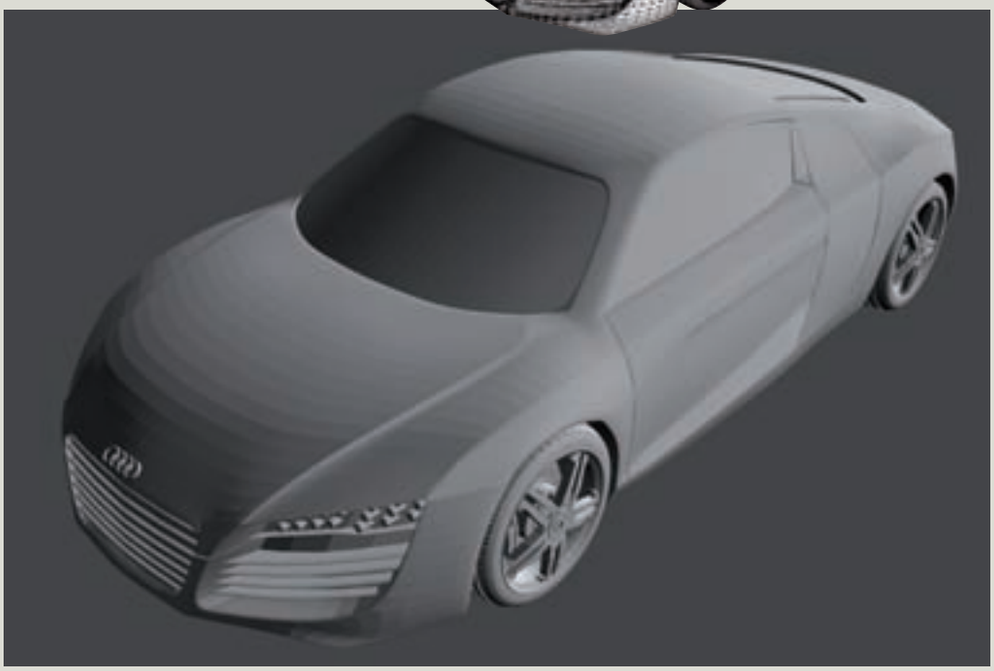

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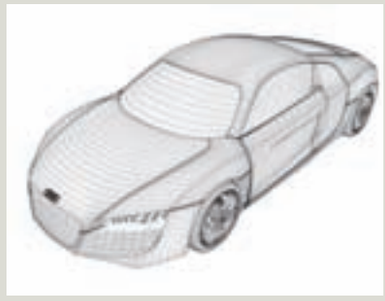

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03 Toon Shader wireframe

The best method to create a high-quality wireframe render that accurately represents your mesh is to use a Toon Shader node. The first step is to select all the meshes in your scene and apply Harden to the normals (Normals>Harden Edge), giving them that familiar faceted look. With the meshes selected, group them together D.

04 Apply Toon Shader

With the top-level group selected, in the Rendering menu select Toon>Assign Outline>Add New Toon Outline). This will apply a pfxToonShape node to your group. In the Attribute Editor, set Profile Lines to Off, Border Lines to Off, Crease Lines to checked, Line Width to whatever you want (I'm using 0.001), Crease Angle Min to 0.0 and Crease Angle Max to 0.0 E.

E

05 Set Toon Shader attributes

Hardening all the edges in the mesh and setting the Crease Angle Min & Max to 0.0 is what allows the ToonShape node to draw lines on all the edges. Setting the camera environment to white, applying a white surface shader to the top-level group and setting the Crease Color to black will produce a black wireframe against a white background. You can then composite this render on top of a clay render to get a really great-looking wireframe render F G.

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Making models

"How do I use Transparency maps to help with modelling in Poser?"

One of the attractions of Poser is the availability of thousands of ready-made models, including clothing items. Sometimes, however, even that vast range of available resources doesn't quite provide you with exactly what you need, or you might want to make your work stand out by adding a level of detail that isn't in the original model. You could learn to model a unique clothing piece with the outlay on software and the requisite learning curve, or you could try a sneaky adaptation of an existing model. You may have heard of Transparency maps; a lot of Poser hair products, for example, make use of them, but if you've never made one yourself then you should seriously give them a try. They're an effective and rapid way of quickly adding a potentially insane amount of detail to a ready-made item. In the case of Poser, if that item is a piece of conforming clothing then you can easily achieve a spectacular-looking piece that bends with and conforms to your figures with no modelling skills required. It doesn't end there, though; you can use the maps to produce dragon wings with holes in or 2D planes to add star fields, text, smoke or light and particle effects all inside your Poser render.

The Transparency map

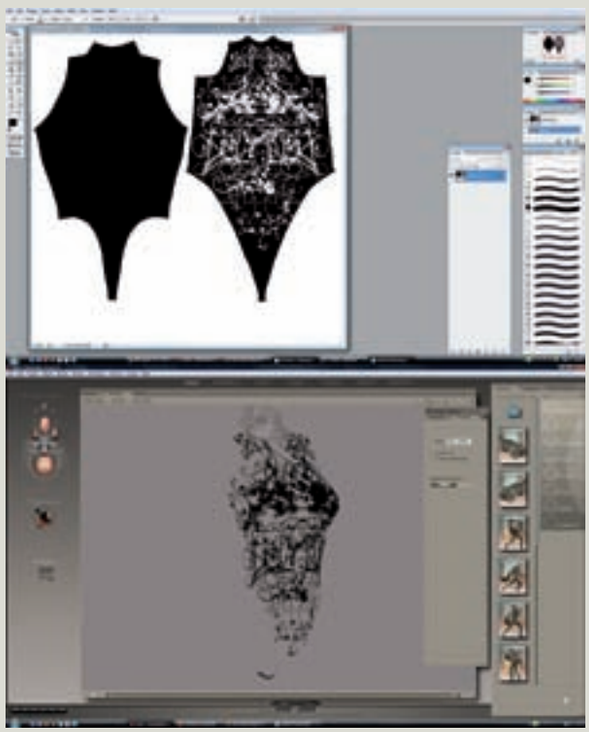
In Poser, the Transparency map is a greyscale 2D image that tells the render engine where to make an item opaque and where to make it transparent, with black being fully transparent, and white being fully opaque; the opaque areas can have all the attributes of a regular Poser material, so you could easily make the filigree gold as seen in the main image. First off, you need to identify the Texture map that your original item uses. This becomes the template for you to begin creating your Transparency map in Photoshop or a similar paint program.

Working in 2D

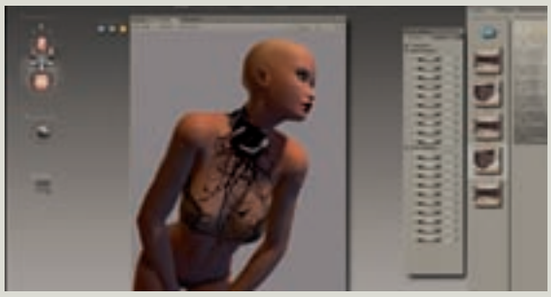
Once you have your template in your paint program, you can begin to draw in the detail that you want. The only limit to the level of detail is your imagination. You could draw it in freehand or, as I have done here with some of Obsidian Dawn's Photoshop brushes, use a ready-made source. Remember that where your map is black, it will be transparent in the render, and where it is white it will be solid. In the screengrab you can see the 2D map and how it displays in Poser, where the 2D map is wrapped around the 3D model.

The Material Room

In the Material Room, you tell Poser to use the 2D image you created as the source for the Transparency attribute. This is also where you add all the other attributes to the opaque areas of the map; for example, in the main image here, these areas were given the attributes of a metallic gold material and the Transparency map was used to cut the details into it. Imagine having to sit and model all that detail... it would take forever. In the main image I also used another map for the *Matrix*-style text in the background, which exists as a real 3D object behind the main figure.



The 2D map and the resultant 3D clothing item made by Poser, applying it to the 3D model



A variation: the Transparency map has been used to make another chest piece from the same 3D model. The possibilities are endless

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Alternative building materials

"I want to give my render of a modern building a different look using some alternative materials. What will look good but is also practical to build with?"

3form and Panelite can be used in many different ways to make your building stand out. Many colour options and styles are available

A few examples of alternative materials. Each manufacturer has many options and styles

This question can get quite philosophical. The question of alternative building materials is the essence of each time period or movement. It can be different for many locations in the world.

To many architects that define these materials, the alternative set is defined by the current popular architectural movement. In this day and age, for much of the world it is the green movement. With this in mind, the concept is any product that's safe to use and with a low carbon footprint/effect on the Earth.

Looking good is a question of the scheme and colour options present with each architectural vision. From an interior design and architectural standpoint, the structure is built and a layer of the alternative material is used for the visual beauty. For the most part, the base structure has not changed.

Some guidelines for the alternative material list are:

- Ecofriendly
- Non-offgassing
- Recyclable – recycled
- Renewable resource

References were supplied by www.ecocentrix.com and www.hsinet.com.

Get a different look in a standard structure

Today there are plenty of ways to make your building look modern, even though it may be as simple as a boxy office structure. If you are working with a boring pre-existing structure, try adding window elements and canopy structures to liven it up a bit. Using materials like Panelite or 3form can give your building a look that sets it apart from other buildings in the area. Creating a façade that combines stone and metal in interesting ways can be even more beneficial and rarely goes out of style. Using a scheme of shiny white, black and chrome with a lot of glass also helps to turn a building from standard to modern. Using LED-lit panels around shiny materials boasts modern, but is pricy. The mass use of bright colours will help as well, but will be outdated faster.

Define what works for your building

When I create a modern building, I tend to think about the use first and then the structure. Print out a copy of your grey render, stare at it and sketch on it. Think of colours, texture and glass. Do a few sketches of material patterns and colours. Once you decide on the colours, pattern and feel, you can find the proper materials that match your artistic vision and construction needs. There are usually ways to keep the building vision close to the original thought during value engineering, but some things always get cut out.

Often, the relatives of wood, plaster and stone are the alternative materials. I would say alternative is more defined by how you use them.

A small building material list

Exterior stone products:

- Fly ash pavers and brick (MFG. CalStar Products)
- Vegas rock (MFG. Stone Source)
- Quikrete green concrete mix (MFG. The Quikrete Companies)
- Pozzotive Plus CMUs and concrete block (MFG. Kingston Block & Masonry Supply)

Exterior glass/glazing products

- Ti-AC 23 Low-E glass (MFG. AGC Flat Glass North America)
- Bent tempered glass (MFG. Standard Bent Glass Corp)
- Panelite (MFG. Panelite LLC)

Exterior metal façade products

- ExoTec façade panel (MFG. James Hardie LTD)
- Anodised aluminium
- Stainless steel
- Metawell façade panel
- 3form materials

Interior glass products

- Glass tile: Vitrex, Crystal A and Project Plus Bronze mix
- Bent tempered glass (MFG. Standard Bent Glass Corp)
- 3form materials

Interior flooring/ veneers/wall

- Plyboo: plywood products, veneers, flooring, wall treatments
- Linoleum: sheet flooring, can also be used as wall panels.
- Panelite (MFG. Panelite LLC)
- 3form materials

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A life on the ocean waves

"How do I create transparent sea water in CINEMA 4D?"

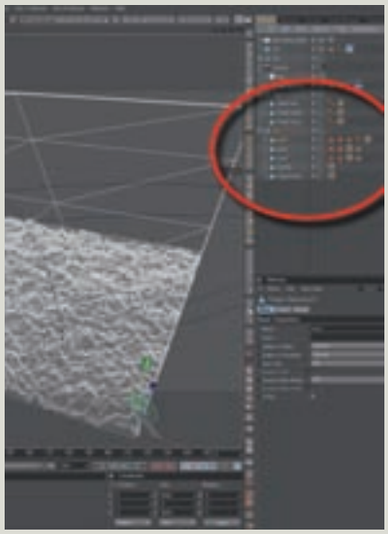
The simplest way would be, of course, to create a cube, modify its x and y sizes so that it covers the desired underwater part of the scene, modify its y size so that it corresponds to water depth and then simply assign a partly transparent material to it. That might be sufficient for some less pretentious projects, but if you want to get a realistic and natural close-up look of transparent sea water that can compete or even outperform the output of a sophisticated landscape-generating software, it is necessary to take a bit more time and devote a bit more attention to detail. In this short tutorial I'm going to describe one of few possible solutions. This solution has the main benefits of being rather simple and of working on all versions of CINEMA 4D down to version 5 or so, while not lacking any quality compared to other possible solutions.

Instead of using a single water volume, we will use three two-dimensional planes and three different semitransparent materials to re-create the effect of light scattering through sea water and getting that characteristic greenish blue tint with increasing depth. Creating convincing transparency of sea water doesn't make much sense if there is nothing in the water to be seen through it, so I'll also mention the creation of the bottom and the shoreline materials at the very beginning of the tutorial. Another thing that can seriously affect the appearance of the sea's surface is colour and gradation of the sky and other surrounding elements of the scene in combination with reflectivity of the water surface. Last but not least, a correct appearance of waves and other surface disturbances gives the desired final touch to the creation of convincing sea water.

Both the shoreline and the water surface materials use the Subpolygon Displacement function of the Material Editor in CINEMA 4D, but if you're using a version of the program so ancient that it does not offer that function then you can use the Bump function instead and still get relatively acceptable results, depending on the light direction and other parameters of your scene.

Close-up vs distant

When using this technique to create sea, you will often find yourself in a situation where your CINEMA 4D camera covers both close foreground parts and distant parts of the sea surface. You should resist the urge to use a single infinite parametric plane (the Floor Object) as the zero surface for obvious reasons – the subpolygon displacement, needed for the waves, would not work at all. Instead, use single, large, reasonably presubdivided mesh and then apply two or more different materials with various SPD levels or without any SPD (replaced by the Bump channel effect) for closer and more distant parts using the Polygon Selection tag.

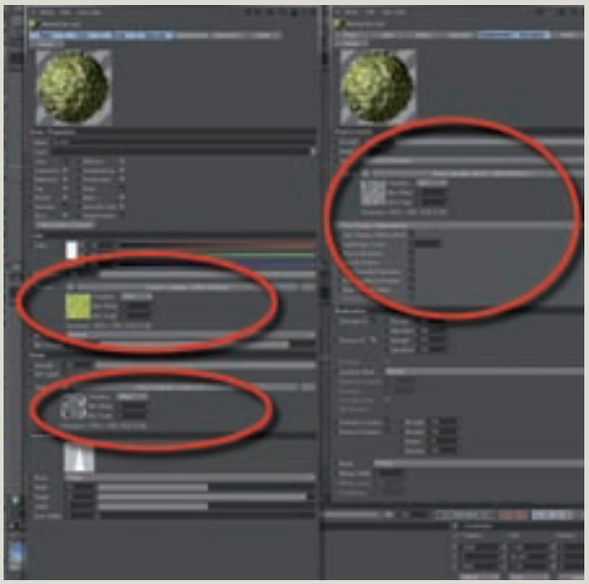


01 Prepare the planes

You'll need four or five polygon planes, depending on whether you intend to use separate planes for the sea bottom and the seashore. The sea bottom plane, the deepest plane and the intermediate plane can consist of a single polygon each, while the shoreline and the surface planes should be modestly presubdivided (or even roughly predeformed) in order to create polygon selection for the partial SPD effect described in the boxout.

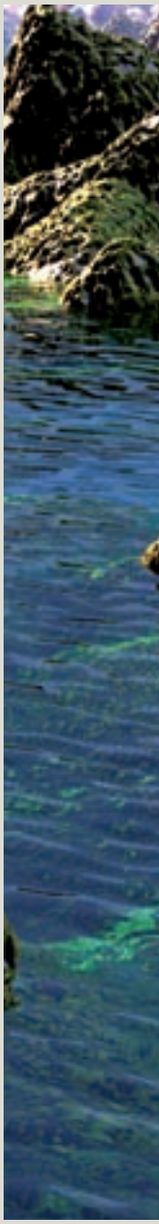
02 The bottom

The sea bottom plane is needed in order to stop any eventual light rays underneath from passing through and to create the darkest and the deepest areas of the water, so it will not be subdivided or transparent and will only have a very dark blue colour. You can also decide that you do not need it at all and use only the shoreline plane, with careful partial application of different materials to prevent deeper parts from being subdivided.



03 The shoreline

This plane will use the SDP function of CINEMA 4D to its full potential; a simple, roughly predeformed plane with a modest poly count will be turned into an irregular chaos of detailed stones only by applying certain materials that use Fractal Noise or Noise Raster textures in their Displacement channel. You can see the basic Displacement setup on the screenshot. Copy the texture to the Color channel and change the colours from black and white to greens and browns to get the algae effect.



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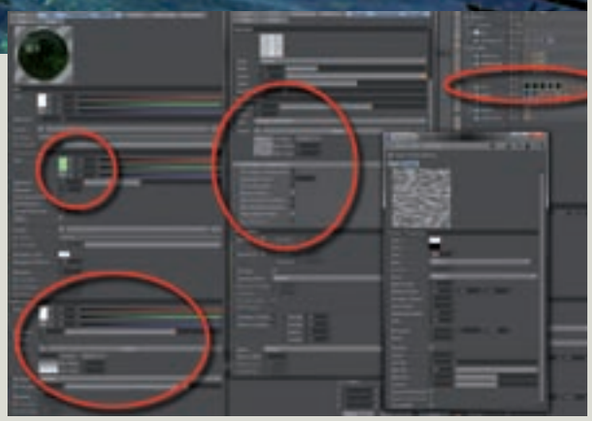
04 The deepest sea material
We need this single-polygon plane in order to get the characteristic shade of deeper sea water, where the sunlight is so scarce that the green algae cease to exist and the colour turns from a blue/green to deep blue. The material's Transparency has got a blue colour and has to be partly transparent so that the underlying parts of the visible sea bottom create darker areas. Position it above the bottom plane at approximately two thirds of the total depth.

05 The intermediate sea material
Yet another single-polygon plane with partially transparent colour. The only difference between it and the previous one is the colour in the Transparency channel – it is not blue but it's of a coldish shade of green. Here, we try to simulate the depth where sea algae still exist but the sunlight begins to fade. Again, there's no Specular and no Reflectivity. It should be positioned at about a third of the total depth.



06 The sea surface
Lower the depth where the complete sunlight spectrum is available, with lots of green algae. Two different physical domains interact here, creating fractal phenomena – the waves. That's why it is not a bad idea to modestly subdivide this plane even before applying the material with Noise in the Displacement channel and the SPD on. The colour should be dark green with lots of transparency. Don't forget to set the right amount of Reflectivity and to create a very small but high specular effect.

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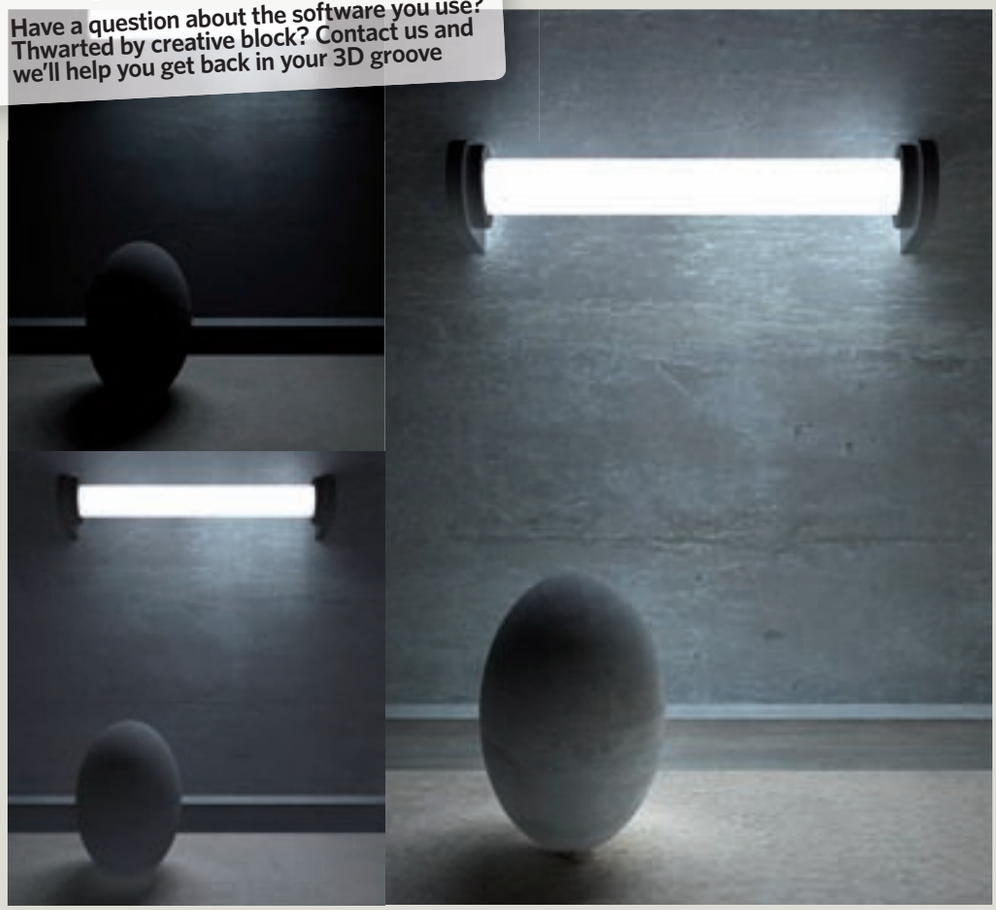


Let there be light

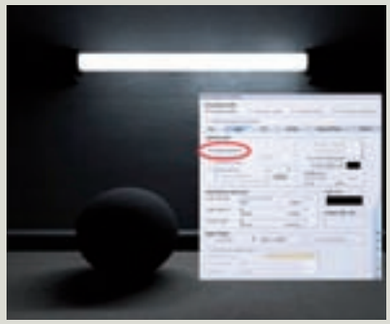
"What's the difference between Global Ambience, Illumination and Radiosity lighting?"

Lighting in Vue is ultimately the most important part of any scene. There are five models of light available and each one gives different results. A scene will receive its light from different areas, including the sun, objects in the surrounding area and the sky. Each lighting model calculates the amount of light it receives from the environment. In the Standard model, much of the lighting being controlled is ambient. This is set using the Ambient Light slider, which can be found under Global Lighting Adjustment. You will be able to control the amount of ambient light coming from the sky. It is the weakest of all lighting models, but the fastest in terms of render time.

Global Ambience calculates more of the light coming from the sky and the environment. Any scene using this setting will reflect the colour of the sky and so, if facing a blue sky, this will be represented with blue shades of light.

Global Illumination is a far more accurate representation of lighting than the standard setting. This is because it calculates more of the light being cast onto the objects in a scene. This results in the appearance of realistic-looking soft shadows. It will also cast a shadow from one object to another. This is noticeable when there is less direct sunlight and looks most effective when the ambient light setting is increased. The downside to using this lighting model is that it works best in fairly small areas, and typically not in outdoor scenes. It also increases render times.

The most accurate of all the lighting models is Global Radiosity. The major difference using this setting is that light is distributed around an object, as in the real world. It also allows the user two more options that are not available in the other light models. One is Indirect Lighting, which controls the amount of light from the sky being cast onto an object. If turned off, then ambient lighting will be used instead of the sunlight. The other option available using Global Radiosity in Vue 7 and above is Optimize for outdoor rendering. This has similar effects on objects that would be achieved using indoor environments, where Global Radiosity is most effective.



01 Global Ambience

Using Global Ambience in an indoor scene will not accurately show the way the sphere reflects light from the lamp. Notice that shadows are completely black and there is no light scattering around the object. All we see is the light from the lamp directly hitting the surface of the sphere. As we do not have any light from the sky, there is none being reflected so we get a very unreal-looking scene.

02 Global Illumination

Using Global Illumination is much more of an improvement over Global Ambience. It casts soft shadows from an object and improves on the overall ambience, whereas Global Ambience just adds the sky ambience, and so is not ideal for indoor scenes. It is therefore vital to increase the overall ambient lighting in the scene, either by adding more lights or adjusting the Artificial Ambience setting.

03 Global Radiosity

Even though render times will increase on average, this is the best setting for indoor scenes. Notice that we see light being reflected from the main lamp all around the sphere. Make sure (for indoor scenes) Indirect skylighting is turned on and Optimize for outdoor rendering is turned off. Increase the Gain setting to get even more light surrounding an object. Changing the Bias colour will affect the colour of the shadows and light.

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3DArtist

Back to basics

3D artist and trainer Robert Redman starts the series with a look at lighting

A

Discover CGI lighting

> A perfect model will only look as good as the lighting, but a less well-constructed scene can be lifted with a little understanding of different lighting methods

Lights, followed closely by materials, are the most important part of a three-dimensional scene. A perfect model will only look as good as the lighting, however, a less well-constructed scene can be lifted with a little understanding of different lighting methods. In the first of this series, we'll be showing you some of these methods and how to implement them into your projects.

To start off with, we will look at adding some standard CINEMA 4D lights to the scene and some of the options we have, such as falloff and shadow types. We'll then add a sky object and apply an HDRI to it. Finally, we will implement image-based lighting, using materials in a similar way to HDRIs to illuminate our scene. There are pluses and minuses to all these methods – some will look better but at the expense of speed. Global Illumination takes a lot longer to render but can give remarkably lifelike renders. HDRIs can produce incredibly realistic results, but often need to be of a very high resolution.

If you follow along with these lessons, you will have a good understanding of how and when to use the various methods. We will work with an untextured scene, so we can see the effects of our various lights. It's also worth remembering that these methods can be mixed depending on your requirements.

You can find the scene file on the DVD, so load it up and let's get started.

Standard lights

CINEMA 4D has a good selection of standard lights, from Spot lights to Area lights. There are many controls available to tailor the look, the most commonly used being colour, noise and shadow types. Light colour is the simplest. By default the lights are pure white, but this is almost never going to produce the most realistic results, as most lights have a hint of colour. You could find an example of the light as a reference, but as a starting point the following settings work as well as a normal household bulb: 250, 220, 192.

A This scene has a combination of lights, HDRI, image-based lighting and Global Illumination to replicate a real studio

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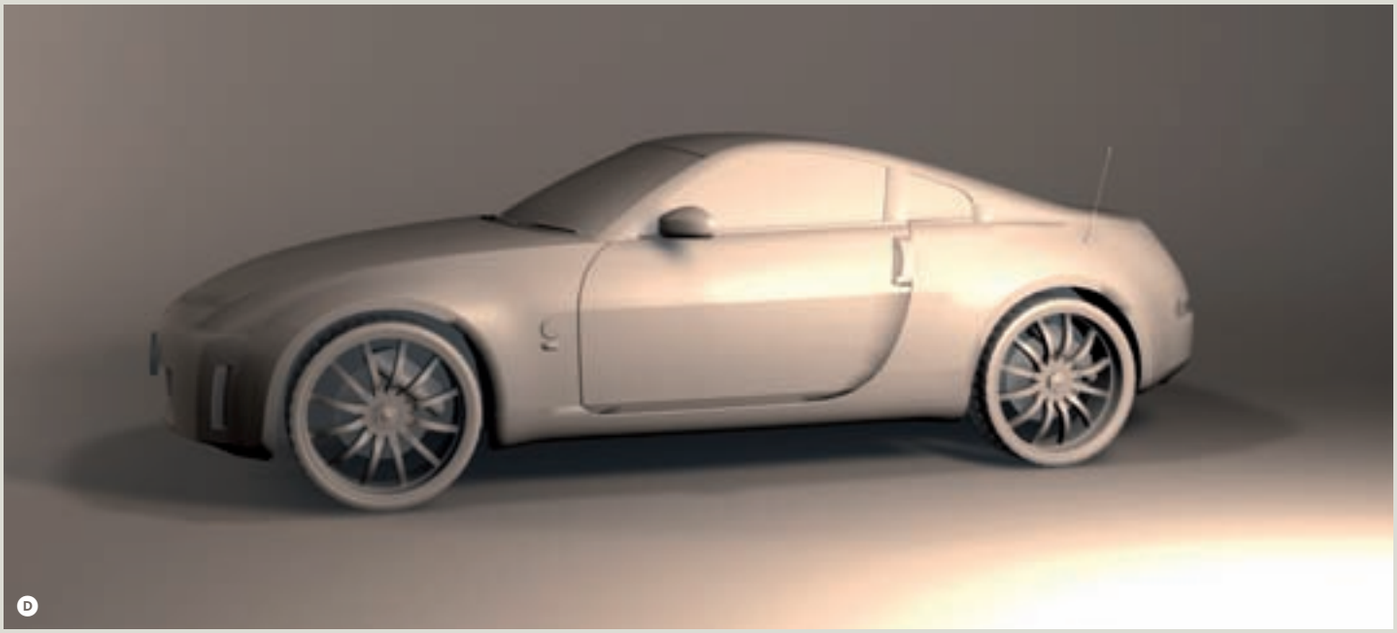

As for shadows, you will find three types: Shadow maps (soft), ray traced (hard) and area. Area shadows tend to be the best quality and have a nice soft falloff. They are great for most light types except for strong distant lights, like the sun. If you need a similar soft look but faster renders, then Shadow maps are a good option. For sunlight like shadows, ray tracing is the answer.

Another point to keep in mind is shadow colour. Shadows are rarely totally black, so try a dark blueish grey colour to reduce what can lead to a typically CG-looking render.

Falloff is an important factor for the overall look of your lights. If you take a look at any lamp in the room you're in, you will see a bright hot spot near the bulb and a softening of the light further away. CINEMA 4D has a few different falloff options but the one we'll use is Inverse Square, which replicates the look of the hot spot well. The size of your scene has a big part to play in getting this right, but once activated you can grab the falloff handles in the viewport to adjust the size very easily.

01 Standard lighting in practice

Add an Omni light to the scene and move it off the floor and into a position you like. You can add two or three and change them independently, or set up one then duplicate it and simply move them into position. In the Attributes manager, set the Shadow type to Shadow maps. Click on the Shadow tab and set the shadow colour to something like 33, 40, 46. You'll probably still have some nasty black shadows, and one way around this is to add a large, dim Area light over your scene as a bit of fill light.

Under the General tab, you can choose from a variety of other light types. Try Spot and aiming the light at specific parts of the model to add some drama B.

02 Edit the falloff

Click on the Details tab and near the bottom you will see the Falloff section. Under Type, choose Inverse Square. You will immediately see a change in the viewport and you will also see the hot spot and a spherical boundary. By grabbing and moving the yellow dots on the boundary, you can change the size of the falloff to match your light and scene. You can also do this numerically in the Attributes manager C.

03 Light placement

Think about the placement of your lights. Are you trying to replicate a studio or an outdoor scene? Think about where the lights come from and place yours accordingly. Because we are not yet using Global Illumination, try adding a less intense light or two without any falloff or shadows at the edges of your scene. This will soften the black shadows and add to the realism. Aim for around 15% Intensity to start with and adjust from there.

Keep in mind that light is additive, so if you have areas of falloff that overlap or multiple Omni lights, your hot spots will become hotter D.

Material-based lighting

Basing your lighting on materials in your scene can often be the most controllable method, with huge scope and versatility.

B Lights are found in the scene elements' pop-up menu. Just click and hold

C You can see the changes that you make to the falloff live in the viewport

D Here, you can see the rendered image with the soft shadows and falloff

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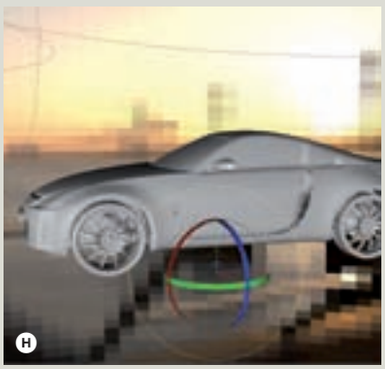
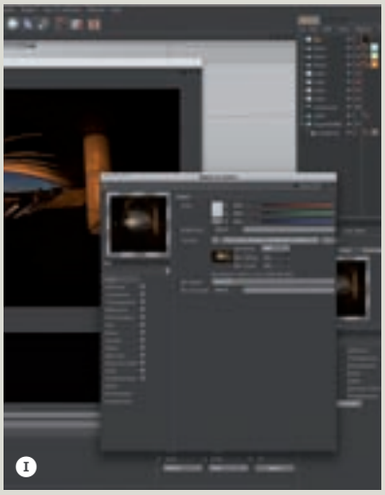
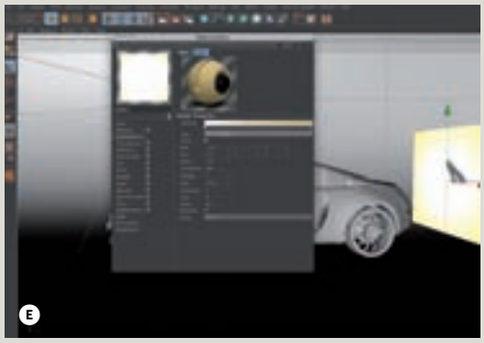
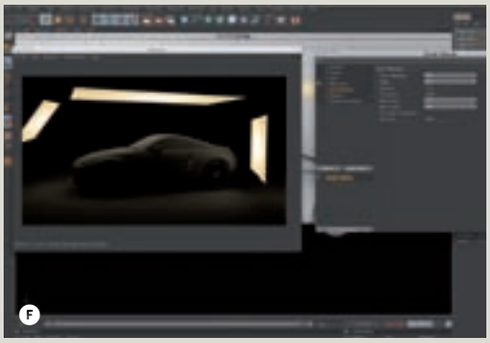
Back to basics









E Experiment with the gradients, noises and shaders you add to the plane

F GI is added here and you can see the quality of the results

G Experiment with colours until you get an idea of how they work together

H With the backdrop hidden, you're able to see the rotation of the sky object

I A very simple material and the HDRI that's used

You can paint your lights in any image editor, such as Photoshop, and apply them like you would any other texture. For this example, we'll keep things simple and use some of CINEMA 4D's built-in shaders. This method is particularly useful if you need to show the light source in reflections or actually in the render itself, as we have done in the main example image. Here, we'll show you how to set up the softbox light on a simple plane object and render using GI.

You will want to have the image (in this case, a gradient) in both the Color channels (for reflections) and the Luminance channel to light the scene.

We'll also activate Global Illumination. This is an important step, and without it our materials would not be able to light the scene. GI takes luminance values and converts the brightness of pixels into photons. This means that you can create a light based on any image. When you've finished the tutorial, try making your own lights. A useful and fun thing to try is TV or monitor screens. Take any photo on your computer and drop it into the Luminance channel of a new material. Apply it to a plane or a screen if you have made one. Turn on Global Illumination and watch your screen glow and light the surroundings. Once you see the colours in the light hitting other objects in the scene, you will understand how powerful this can be.

It is possible to use this with movie files as well, and although outside the scope of this tutorial, it is something to think about when you come to animate a scene.

01 Image- or material-based lighting in practice

Create a plane with one segment to each side, place it in your scene and apply a new material to it. Double-click the material to open up the Material editor. In the Color channel, click the Texture button and select Gradient in the menu. Click the Gradient button to open its settings. Set Type to Circular and change the colours, either to our settings or choose your own. Copy this channel and paste it into the Luminance channel. You'll usually want to increase the Brightness here – try 300%. We've duplicated this plane and you can see the effect in the screenshot. If you only want the light to come from one side of the object, you can click the Texture tag and choose either front, back or both E.

02 Global Illumination

For this to work, you need to click on the Render Settings button and then the button that says Effect. Choose Global Illumination and it is applied to your scene. GI has a lot of settings, which can drastically change both the render and the render time, but for now leave it at default. The Global Illumination settings are a whole other tutorial and the defaults are pretty good for our needs F.

03 Material use

Let's take a closer look at how the Global Illumination is using our materials. Duplicate the material so that you have one for each plane in the scene, and change the colours so they are noticeably different. We aren't looking for pretty here, we just want to see how they work. We've chosen a red, a green and a blue (RGB). You can now see that without having to set falloff values or shadow settings, you have very realistic lighting with gentle falloff, hot spots and a really clean mix of lighting colour G.

HDRI

High dynamic range images, commonly known as HDRIs, became big news a few years ago. They are created by merging different exposures of the same image to build a file that contains luminance data. As 3D artists, we can take advantage of these images to light our scene. In CINEMA 4D this is a simple process, and all you have to

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do is add a sky object, apply the HDRI and make sure Global Illumination is turned on.

Many people think that you need the HDRI in the Luminance channel, but CINEMA 4D is clever and you need only put it in the Color channel, saving a little work. If you are using an HDRI that will be visible in the render, then make sure you have one of high enough resolution to avoid pixelation.

HDRIs come in two main formats: HDR and EXR. There are many sources of both online and many are free. We would suggest if you are using a version of CINEMA 4D prior to V11.5 that you only use HDR, as some users have found problems trying to use EXR.

Some of the benefits of HDRI lighting are first the ease of matching your CG lighting to footage if you are compositing. If the HDRI photography is taken on location, then setting up the render is a lot easier. Second of all, it can make scene management a lot more, well, manageable. Instead of needing a range of lights and all their settings, you can use just one object and one material. Of course, there can be times when you will want to use lights as well but life will still be easier.

01 HDRI lighting in practice

Add a sky object to your scene, either from the Scene Objects palette or from the Object menu. Once you have applied your HDRI to the sky object, you can rotate it like any other object to make whichever part of the image visible in the render (if you are showing it). This changes the light accordingly, as the GI calculates from each pixel H.

02 Material manager

Choose an HDRI from your computer and drag it onto the Material manager. This will create a new material. By default, all materials have the Specular channel active. You don't need this, so uncheck it. Apply this material to the sky object and hit Render (assuming GI is still active) I.

03 Color channel

Depending on your image file, you may find that the render is lit nicely but may be a little blotchy. If this is the case, then open the Color channel of the material and increase the Blur. Start with around 8% and increase in small increments until the blotchiness is resolved.

Combining lighting methods.

You've now worked through setting up a variety of lighting methods, but which do you use in a given situation? Well, most often you will find you will need to combine HDRI, materials, lights and GI.

For a truly realistic render, you will probably want to enable GI for almost every image. You may then need to match ambient lighting for compositing, so an HDRI will be needed on a sky object. Objects in your scene may have luminous qualities, in which case you'll need to have luminous materials, again meaning GI needs to be active.

It's also possible that you will need lights in the scene, and although we didn't use GI with the lights in the first example, they work just as well with GI as images do.

In this example, we will set the scene up as though it is in a studio with a window behind the camera. The HDRI will emulate the room and the daylight passing through the window.

We'll add an Area light above the car and then reactivate a couple of our planes to add some variety and colour. The main problem with using lights is that they don't produce any geometry, so they are best used either out of the field of view or behind another object. You can turn on an option to show the light in reflections, which does add to the realism but you won't see it in the scene.

The hardest part of mixing light sources is balancing them so they give the result you expect. You will need to adjust the intensity of the lights and we would suggest working on them one at a time. Start off with only one active and get it to where you are happy. Move on light by light, and you will find controlling your render much easier.

01 Mixed lighting in practice

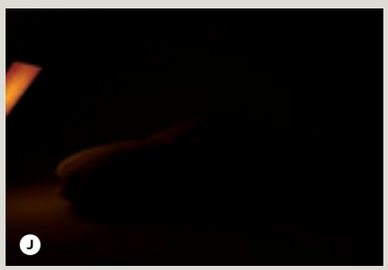
Deactivate all lights but one of the planes. Do a render and then open up the Material editor for that plane. Adjust the brightness or colour, whatever changes you need to make. You may need to do a few renders to check that your settings are working J.

02 Light levels

Turn on your next light and adjust it to a level you are happy with. This is also a good time to tweak the positions of lights, as there is less visual noise to distract you. Here, we've set the Brightness of the blue plane to 275% K.

03 Final touches

Above the car we decided to use the Area light rather than the plane with the Brightness set to 42%. Last of all, we turned the sky on and changed the HDRI mix strength down to just 24% in the Material editor, as we wanted the ambient light to be less intense L.



J

K

L

J Rendered with just the red plane active with a Brightness of 512%

K The second light was adjusted to suit the scene

L The lights are all set up and looking good

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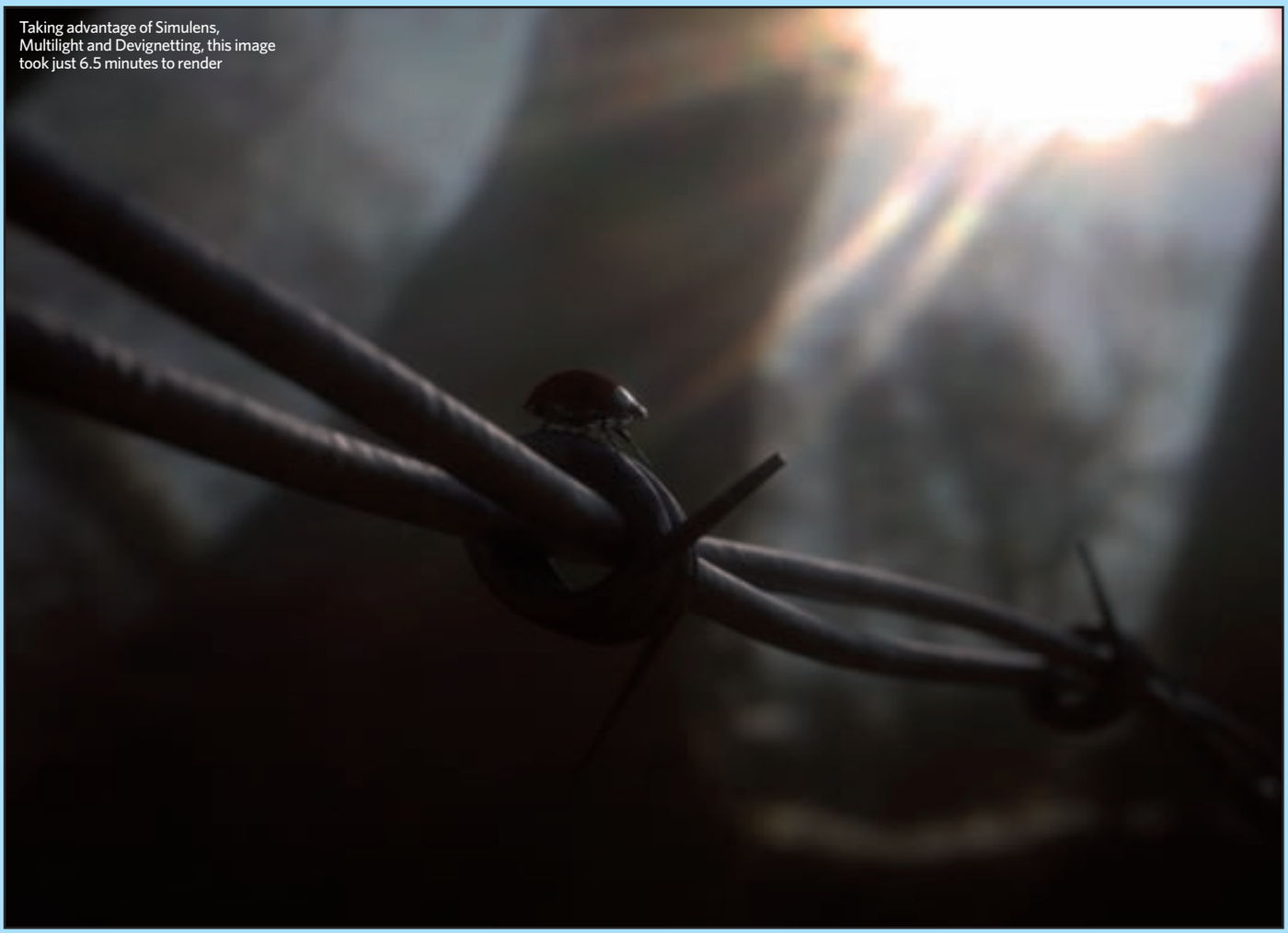

Taking advantage of Simulens, Multilight and Devignetting, this image took just 6.5 minutes to render

Maxwell Render v2 $995

Maxwell Render just grew up into a cleaner, faster, more usable renderer

Maxwell has a long-standing reputation as a high-quality renderer, especially with architectural visualisation and product shot artists. The quality and ease of use was let down only by its relatively slow computation times, which could be very high indeed. This has all changed with version 2, which has boosted performance as well as a raft of other changes and various enhancements.

Maxwell comes as a suite of software, starting with Studio. This lets you import models, apply textures and then light the scene, set up cameras and render.

MXED, a standalone material editor, has all the same features as the Studio material editor and is great for creating new materials in tandem with an image editor, saving system resources and screen space.

Then there is the render interface itself, with the Multilight, Simulens and Exposure controls.

Plug-ins are available for most 3D applications. These vary slightly depending on your host, but it is usually a case of setting up the environment, applying materials and then setting the render output options, which is all very simple and quick to do.

There is no arguing with Maxwell's ability to produce photorealistic images. The trick is to understand how different materials and their components work. Thankfully, the Maxwell Think! website has a set of video tutorials that will guide you and help you get the best from your images.

The site also hosts over 3,500 Maxwell materials, which are organised by colour group or keyword. HDRIs and Maxwell skies are found here as well.

One of the features that gains a lot of attention is Multilight, and rightfully so. This enables you to adjust the intensity of any light-emitting material during the render and afterwards, with simple sliders. You will find this incredibly useful, and – as well as being fun – it can save you hours of rerendering. Version 2 takes this a step further. Each emitter also has a colour picker, letting you change the colour of each light on the fly, which is a stunning and truly useful ability.

Also new to version 2 is the layered material system. This works in a similar way to Photoshop and, as expected, allows you to add layers upon layers of materials. For example, you could have a car paint material, and then add a decals layer followed by a dirt layer or water drops. The layers can be controlled by Opacity

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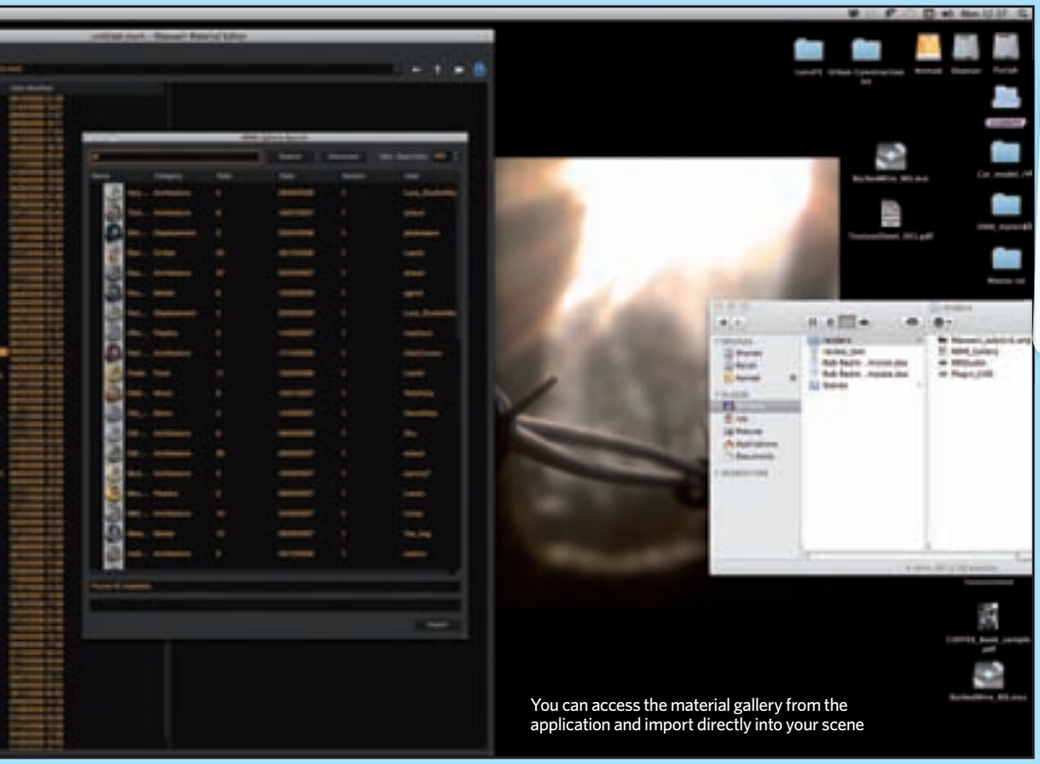


You can access the material gallery from the application and import directly into your scene

The good & the bad

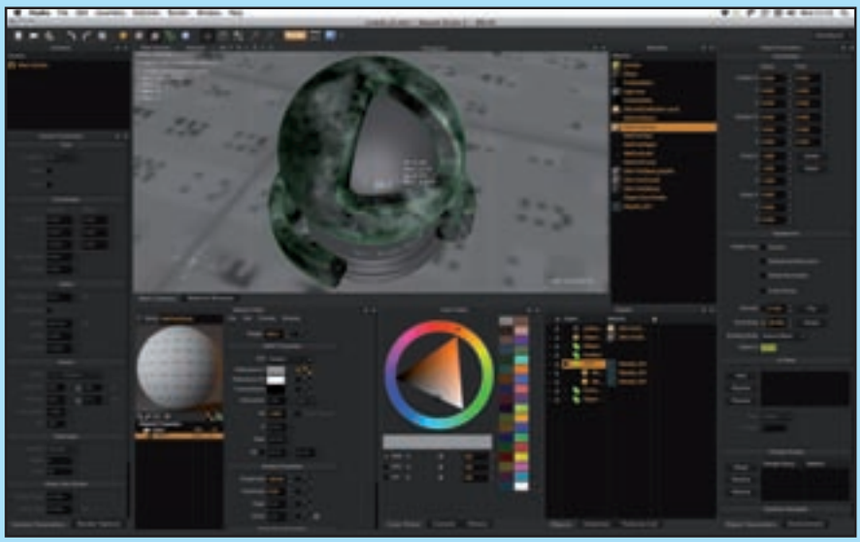
- ✓ Photoreal output
- ✓ Easy-to-use interface
- ✓ No modelling software required on the rendering machine
- ✓ Complex materials are easy to build
- ✗ Render time can be long
- ✗ Learning new terminology can be daunting

Essential info

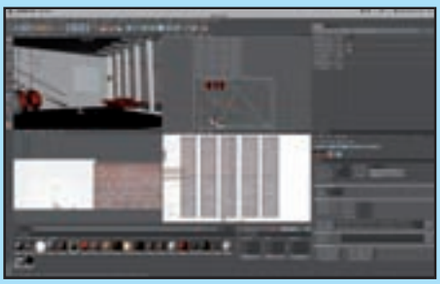
www.maxwellrender.com
● $995

OPERATING SYSTEMS
- Mac OS X (32- and 64-bit), Windows XP, Vista, or server 2008

OPTIMAL SYSTEM REQUIREMENTS (PC)
- 2GHz Intel Pentium 4, Athlon or better
- 1GB RAM minimum, 2GB highly recommended
- 400MB available hard disk space for installation
- Three-button mouse is recommended



Clear and easy to use, the drag-and-drop Studio interface is a joy to work with



The Maxwell plug-in is just as easy to use in your host application, in this case CINEMA 4D

or Weight maps. This system is very easy to use and makes complex materials extremely simple to create.

Simulens simulates the way light behaves in a camera lens. You load an Alpha map of your iris and/or obstacles, set the values you require and it works its magic. You will see the effects or diffraction and scattering using the iris shape and the Obstacle map. There are a few presets, including a set of Iris maps with varying numbers of blades and a selection of Obstacle maps, including dust, eyelashes and fingerprints. The extra realism these effects can add is astounding, and producing a filmic look is very easy. Finally, Simulens has Devignetting, which provides a control to eliminate the effect of the lens darkening the edges of your image, something that will be more apparent with a wider focal length.

Other noteworthy additions are single-sided subsurface scattering (for leaves, paper, etc) and a revised Material wizard, which gets you up and running fast.

The new features and speed enhancements make upgrading to v2 well worth it, and the speed boost alone will soon pay back the cost, as well as make rendering animations viable with Maxwell.

Our verdict

Features	9/10
Ease of use	9/10
Quality of results	10/10
Value for money	8/10

> “An excellent upgrade in terms of both performance and features”

Final Score 9/10

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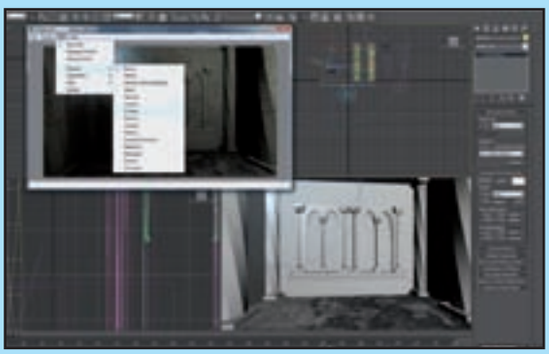
The Shaderlight renderer is capable of good results if properly handled

Shaderlight 1.0 $895 US

Cut out all those tiresome test renders

The need for endless test renders is probably the single biggest time-waster for the 3D professional. Every change you make to lighting, materials or any other aspect of your shot seems to require you to sit, twiddling your thumbs, waiting for a test render before you can discover that you need to make another minuscule adjustment.



It's possible to display different render elements instantly

The makers of 3D applications have tried to minimise the time wasted on test renders by offering a range of real-time shaders, OpenGL lighting, area rendering options and other snazzy tools. These have helped, but in the end the only way to see what a shot's going to look like is still to go for a full-scale, full-quality render of it.

Shaderlight is a new kind of renderer for 3ds Max, which sits in the background rendering your scene constantly as you work on it. Using what it calls intelligent pixels, Shaderlight stores information for each pixel, not just about its colour but about what else in the scene affected it. The practical upshot of this is that it doesn't need to render the whole scene again every time you change one element of it, so you can tweak the details of your scene and see the result within seconds on a full-quality, full-scale render.

All you have to do is load it up (you have to do this through the Utilities panel rather than the rendering interface, which is a little annoying) and it'll carry on updating in its own window. That window is outside of 3ds Max, however, so you can't have it in one of your viewports and you have to keep switching back and forth to see it.

Each time you change something the render updates progressively, giving you a blurry image that clears and becomes more detailed over time. All of this is done entirely in the background without affecting 3ds Max's performance.

How useful this is depends on what you're doing. It's very useful when you're tweaking

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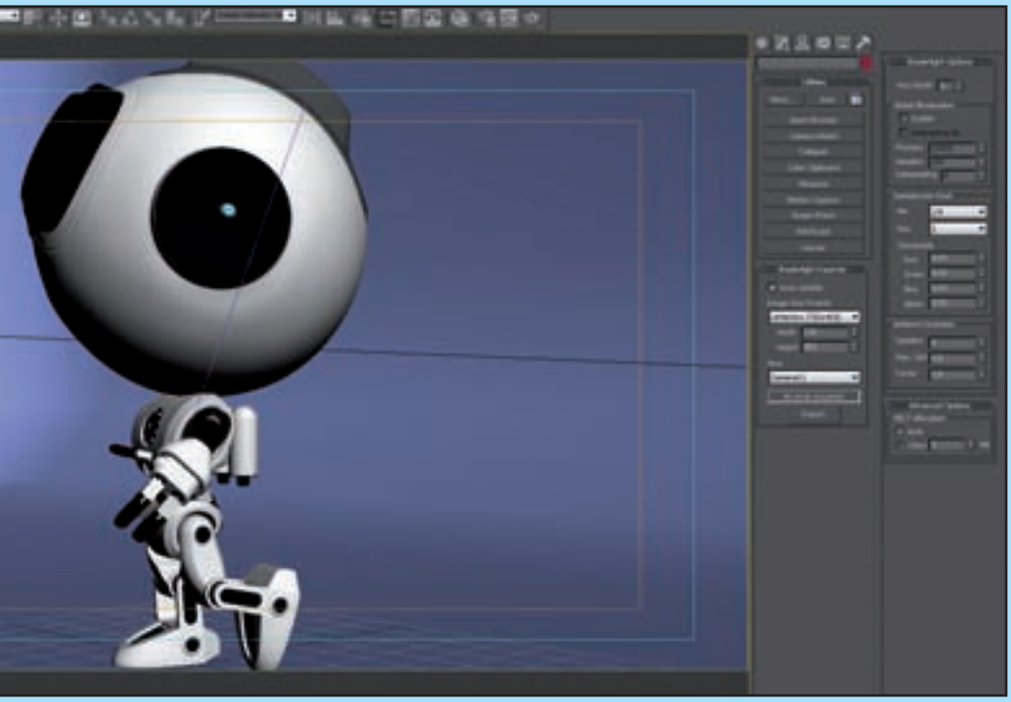


The renderer itself doesn't have as many options as mental ray or the scanline renderer

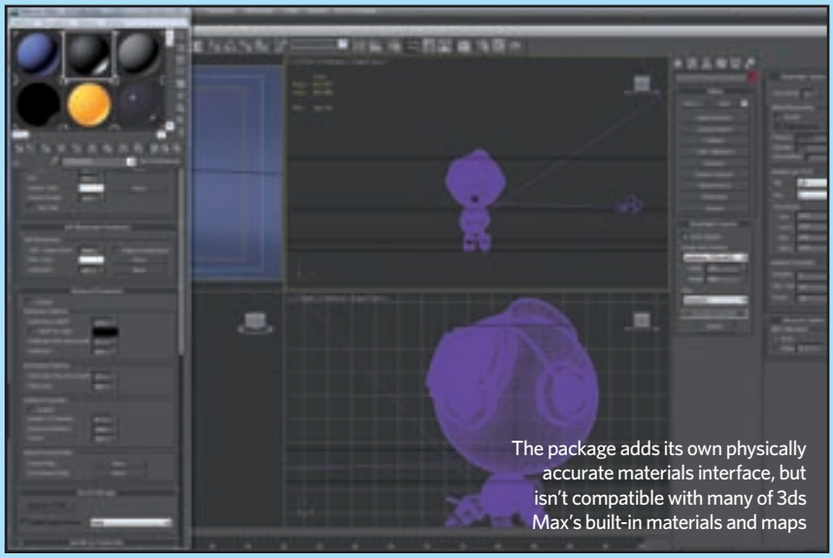
materials or adjusting small details. Lighting updates tend to be slower (simply because lights tend to affect more pixels in the shot) and moving the camera or large objects usually means an almost total rerender of the shot. Even so, the results tend to be very fast.

Of course, there is a downside. You have to use the Shaderlight renderer. You can't use Shaderlight for previews and then switch to mental ray to create the finished images, expecting the results to be the same. Shaderlight isn't a bad renderer by any stretch, but it doesn't have all the bells and whistles of mental ray.

It also doesn't support a lot of 3ds Max's materials and maps (ie Cellular, Noise, Tile, etc) and it can't handle anything but standard lights and ray-traced shadows. Furthermore, rendering animation is a bit of a hassle.

The renderer does offer Global Illumination and Ambient Occlusion, and it's well up to the challenge of most 3D work. It could do with a bit more sophistication, but the time saved by being able to see your render as you work is significant.

All in all, Shaderlight is a great idea and it's well on the way to creating a fundamental change in the way that artists work. It's not quite there yet but, in the meantime, if you value the ability to tweak your image in real-time more than you value the range of features in mental ray, it's well worth a look.



The package adds its own physically accurate materials interface, but isn't compatible with many of 3ds Max's built-in materials and maps

The good & the bad

- ✓ Background rendering
- ✓ High-quality images
- ✓ Very responsive without affecting 3ds Max's performance
- ✓ Powerful idea
- ✗ Renderer is a little limited
- ✗ No support for many of 3ds Max's material and lighting features
- ✗ Not fully integrated with 3ds Max

Essential info

www.artvps.com
- $895 US

SUPPORTED BROWSERS
- 64-bit Windows Vista or XP

OPTIMAL SYSTEM REQUIREMENTS
- 3ds Max
- At least 8GB RAM

Complex scenes take a while to render, but small changes can be made very quickly

Our verdict

Features	6/10
Ease of use	7/10
Quality of results	7/10
Value for money	7/10

> "Well on its way to changing the way 3D artists work, but not there yet"

Final Score 7/10

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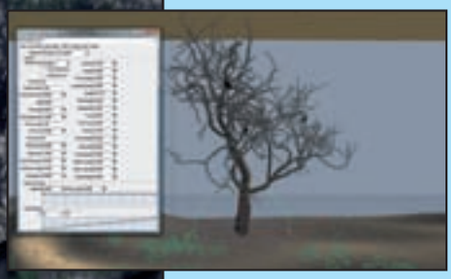
Realsoft 3D V7 €600

A mid-range 3D application for the professional artist

Realsoft's renderer works in 64 bits

The interface can be intimidating, but it's pretty well organised



Modelling tools include a sophisticated tree generator

Realsoft 3D has always sat right in the middle of the 3D application market. It doesn't have the price tag of 3ds Max or Maya, but at the same time it's not a toy. This is a fully fledged artists' tool, which deserves to be taken seriously by professional users.

In use, Realsoft's interface adapts to whatever you're doing at the time. Tabs down the left-hand side provide a hierarchical view of your scene and allow you to select and manipulate any object. Icons to the right of the main view window control navigation and display, while a timeline at the bottom allows you to step through animation.

At the top of the screen, a set of tabs allow you to add anything from primitive solids to materials, lights, particle systems, footstep animation or dynamic objects. It's all pretty well organised, if a little daunting for the first-time user.

Realsoft includes all the standard modelling tools (including subdivision surfaces and meatball modelling – but not sculpting tools). There's also a procedural tree generator with control over all aspects of the way branches are constructed.

Animation is pretty well served and includes keyframe and dynamic motion. However, there's also an additional wrinkle in that you can choreograph objects to react to other elements in your scene. So, for example, you can set up a wheel to rotate as a vehicle is moved, or use a character's movements to drive bulges in its muscles. Character animation is handled with an IK system, which includes footstep animation. If you want to be even more sophisticated then there's a scripting language, too.

Realsoft uses its own renderer, which is pretty good and includes fur and caustics. This works in 64 bits per channel for greater brightness ranges in your renders. Plus, there's a built-in painting tool for creating textures (although you'll probably still need to refine your textures elsewhere).

Version 7 is really about improving existing tools rather than adding headline-grabbing new features. There are improvements in the Lathe and Tube tools to make them easier to work with. Plant leaves, meatballs and booleans have also been upgraded.

Rendering is now a lot faster on multicore machines, and very dense meshes are especially well optimised. There are also a few tweaks to particles and a new set of tools for exploding objects into pieces.

However, there's nothing really groundbreaking here to propel Realsoft 3D on to new heights. If you're looking for a lot of the tools of high-end packages without the cost, you could do a lot worse than this. If you've already got version 6, there's not a lot here to tempt you to move up.

> "Version 7 is really about improving existing tools rather than adding headline-grabbing new features"

Our verdict

Features	8/10
Ease of use	7/10
Quality of models	7/10
Value for money	8/10

> "No new innovations in version 7, but a good strong package nonetheless"

Final Score 8/10

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Magnetar F3 £1,699

Need some heavy-duty rendering power? Check this out

There's no doubt that your average PC setup can only take you so far. When the mesh preview gets so complex that it stops putting in detail and the frame rate for manipulating the view drops from 50fps to occasionally, then it's time for a new graphics card. When the render time turns from hours to days, it's time to replace the whole hog.

The Armari Magnetar F3 is a beast of a machine for the small studio or well-to-do enthusiast. It boasts an Intel i7-860 2.8GHz quad-core processor for major grunt work, and has a dynamic overclocking mode for single-threaded apps that boosts the clock speed to 3.46GHz. The good news on the RAM front is that the system supports DDR3-1333 SDRAM. The bad news is that you only get 2GB of it. Consider an upgrade request an affordable yet essential item. If you want cavernous storage for all those huge 3D files, consider the 1TB hard drive from Samsung as ticking that particular box. What really makes the difference on handling complex scenes prior to clicking on Render is the graphics card. In this rig there's the PNY Quadro FX 1800 with 768MB of GDDR RAM. It boasts 64 CUDA processor cores, OpenGL 3 and DirectX 10 support plus Shader Model 4.0.

There's a quality mouse and keyboard, you get Windows 7 Pro 64-bit rather than Vista and there's a one-year on-site warranty and two-year return to base cover. For the small studio, this is a good combination of power at an affordable price.

www.armari.com

Our verdict

Features	9/10
Ease of use	9/10
Build quality	9/10
Value for money	8/10

"Plenty of rendering grunt power, but needs a bit more RAM"

Final Score 9/10

Sandberg StreetBlaster £34.99

Quality headgear at an affordable price. Or is it?

With the graffiti styling, we were tempted to litter this review with phrases like dope, down with the kids, street and sick. But we won't, so you can thank this reviewer for that with PayPal donations please.

This is a set of headphones for those times when you need entertaining because your render machine still has two hours to go. It's got an automatic head size adjustment and a 'unique' Street'n'Game two-in-one cable system. This actually means that the head strap should have magnets on the end so it is automatically dragged down to nestle on your head, whereas the two-in-one cable system is nothing of the sort. It's simply two cables: a short one for MP3 players and a long one with a split mic/speaker for connecting to your game system/PC. Is that so unique?

The headphones themselves are connected by a couple of curved metal rods and don't so much as caress your ears as grab your head in a vice-like grip. You'll probably need quite a small-sized head to avoid pressure-based headaches from sustained use. The sound is good, mind you, which is the most important thing. The treble isn't that sharp but the bass does give a satisfying punch. Keep your warranty or receipt safe, though, since one of the attachments for the headstrap came off during the review and can't be fixed. Still, this is worth checking out even if the StreetBlaster isn't dope. Oops, sorry.

www.sandberg.it

Our verdict

Features	7/10
Ease of use	7/10
Build quality	7/10
Value for money	7/10

"Nice-looking headphones, but can be a tight fit"

Final Score 7/10

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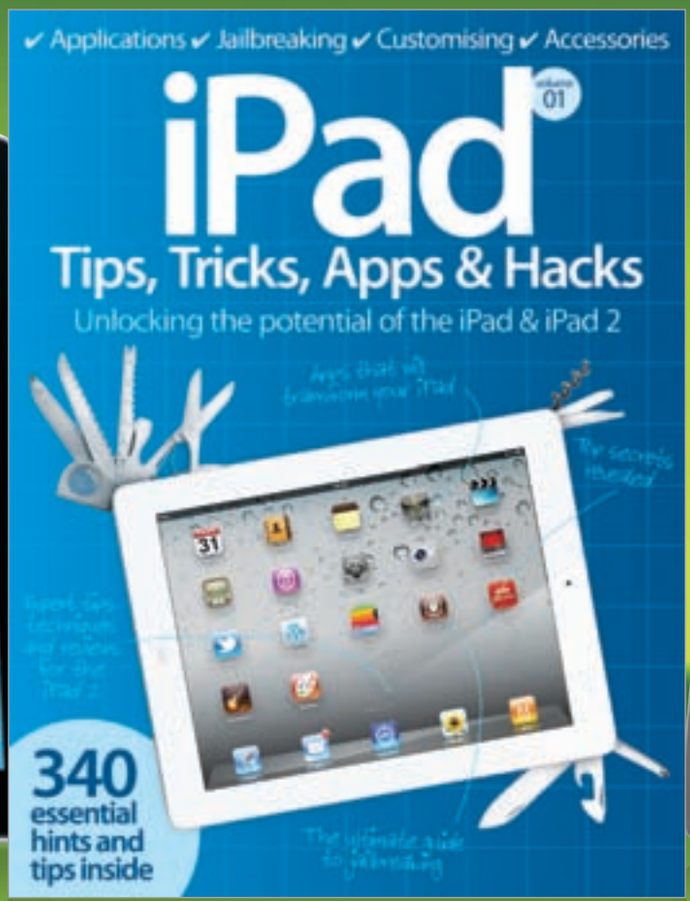
We don't keep secrets

iPhone
Tips, Tricks, Apps & Hacks
The insider's guide to unlocking the potential of the iPhone
340
essential hints and tips inside

iPad



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Learn the truth about iPhone, iPad, Android, Photoshop and more with the Tips & Tricks series' expert advice and tutorials

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workspace 3D

Inside guide to industry news, studios, expert opinion and education

> ZBrush changed the way I work and not really in the usual micro detailing way you would expect. In fact, I use ZSpheres and the retopology tools, as they have redefined the way I model

Guillaume Tiberghien, character modeller for Ubisoft, on working with ZBrush. Page 100

100 Insider interview

Guillaume Tiberghien

From *Tom Clancy's Rainbow Six Vegas 2* to the *Far Cry 2* trailer for E3, Guillaume Tiberghien has a varied workflow as a 3D modeller for Ubisoft. He also likes to create his own particular brand of characters

098 News

Industry news

Shaderlight changes the way the industry works, Playmobil is brought to life with MachStudio Pro and are you happy in your 3D workplace? A recent survey reveals all

102 Uni Focus

Brigham Young University

Brigham Young University is situated in Provo, Utah in the United States. Currently ranked as the 71st top university in the whole of America, this university is doing great things – especially when it comes to animation

inside

Monster
Guillaume Tiberghien
Personal portfolio site
http://tiber.cgsociety.org/gallery/

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Shaderlight changes the way 3D artists work

ArtVPS has announced the full-release version of the plug-in

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A Scenes can be adjusted without painful rendering times in Shaderlight 1.0

B A 14-day trial lets you experiment with the features of Shaderlight before investing

C Various improvements have been made to Shaderlight since the prerelease, including changes to the GI and image-based lighting

D Shaderlight significantly reduces workflow time, which will change the way that 3D artists work

Users of 3ds Max are set to benefit from the first full-release version of ArtVPS's Shaderlight 1.0, which is available now. The interactive rendering plug-in comes after a lengthy research and development period of two years, which should help to reduce workflow hold-ups faced by 3D artists.

Shaderlight offers a whole new approach to rendering, as a physically based, progressive ray tracer that lets you make interactive changes to materials, environments, lighting and textures (MELT elements) at any point in the rendering process. When you make changes to any of these essential elements, the software reads information from each intelligent pixel to update the image without the need to render the whole scene again. It does this by "maintaining the relationship between the colour of the rendered pixel and the elements of the 3D scene that contribute to that pixel," according to ArtVPS publicity materials.

Michael Lawson, ArtVPS's chief technology officer, says of the technology: "We knew when we set out to create Shaderlight that we had the potential to create a fundamental shift in the way 3D artists work by removing the bottleneck inherent in the linear render/change/re-render process. We're delighted to have realised that goal with the launch of Shaderlight 1.0. With this kind of nonlinear workflow, artists working in today's competitive environment need no longer be shackled by time-consuming and inefficient rendering processes that eat into deadlines and stifle creativity."

3ds Max is one of the widest used pieces of software in the CG industry, so the Shaderlight plug-in will come as welcome relief to many 3D artists who use 3ds Max on a daily basis, significantly cutting down workflow times. Up until now, the Shaderlight software has been in prerelease, getting feedback from users to build the final product. Those who did download the prerelease software can get the full version at a 50 per cent discount. The full plug-in costs $895, and there's a 14-day trial available. You can find out more about the Shaderlight plug-in at www.artvps.com.

> "3ds Max is one of the widest used pieces of software in the industry"

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Playmobil brought to life with MachStudio Pro

Hollywood CG experts utilise the StudioGPU software

E MachStudio Pro was used in the production of *Playmobil: The Secret of Pirate Island* DVD for Sony Pictures Home Entertainment

StudioGPU's MachStudio Pro (www.studiogpu.com) has been used to accelerate the production of the *Playmobil: The Secret of Pirate Island* DVD for Sony Pictures Home Entertainment.

Playmobil: The Secret of Pirate Island is a 90-minute feature-length movie that is based on the popular Playmobil Pirate Playsets, bringing the children's toy figures to life. The CG work was done by Hollywood-based Extra Large Technology (XLT, www.extralargetech.com), which used the MachStudio Pro software for its real-time 3D workflow and rendering capabilities, aiding in both time and cost cutting.

"The *Secret of Pirate Island* licensed entertainment project is a first of its kind for Playmobil, and the company was very involved in every aspect of the look and feel of the entire project," says Charles Cohen, founder and CEO of XLT. "The real-time performance of MachStudio Pro allowed us to have greater flexibility and control over the lighting and rendering. The ability to make changes quickly and easily in film quality on the desktop with MachStudio Pro was critical in delivering the project on time and on budget."

The whole thing was put together in less than 18 months by XLT, while the *Playmobil: The Secret of Pirate Island* DVD is available now from www.sonywonder.com, Amazon and other authorised retailers.

> "The real-time performance of MachStudio Pro allowed us to have greater flexibility and control over the lighting and rendering" **Charles Cohen,** CEO, XLT

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esc
escapestudios.com

CG professionals 'happy' in their career

A new survey reveals the state of the CG industry

CG artists are happy in their jobs, according to a survey conducted by Escape Studios.

The survey showed that 80 per cent of CG professionals were happy working in the industry, and 59 per cent would recommend the career to others. Key concerns are indicated to be job security and the fact that extra training has been needed to refine skills.

Dominic Davenport, CEO of Escape Studios, commented: "Everyone is worried about their job, and rightly so – most CG professionals know they need to keep their skills up to date if they are to remain employable, and expect to have to fund their training out of their own pockets."

The survey also revealed that graduating students are willing to put in the time to break into the CG industry, with 58 per cent expecting to work 10-20 hours more than the professionals' 40-hour week. 89 per cent of the students believed that doing something they loved counted for more than high pay. It's this dedication that will ensure the future of CG.

XpanD 3D glasses increase in popularity

XpanD celebrates high market share worldwide

XpanD, manufacturer of active-shutter 3D glasses, has reported a significant worldwide share of distribution for use in cinemas, home theatres, videogames and more.

The company has an estimated 90 per cent market share in Asian cinemas and 50 per cent in Europe. In 2010, XpanD will be rolling its innovative technology out to North America, as 3D films become even more popular.

Currently, it sells more than 1.5 million of its ecofriendly 3D glasses each year, which has helped to cut costs for cinema owners and home users. Find out more about the company and its glasses at www.xpandcinema.com.

Industry insider

Guillaume Tiberghien

3D modeller for Ubisoft

Each issue, 3D Artist finds out how the top people in the 3D industry got their jobs and what you need to know to get a foot in the door

About the insider

Job 3D modeller

Education ICARI, Collège de Bois-de-Boulogne 2002–2003

Company website www.ubi.com/ENCA/default.aspx

Personal website http://tiber.cgsociety.org/gallery/

Biography I have been working for Ubisoft since May 2006 in my hometown of Montreal. I have worked on such projects as the *EndWar* UbiDays 2007 trailer, the *Far Cry 2* E3 2008 trailer and the recent 'Assassin's Creed: Lineage' web episodes. I love playing videogames and watching movies, while I'm very passionate about my work. I also take tango and salsa classes, which help me to get out of my house and meet people!

Guillaume Tiberghien has the interesting job of modelling sets and props for videogame trailers and web movies in his role as a 3D modeller for Ubisoft. Modelling anything from guns to houses, he works along with the art director as his supervisor. He's lucky to live in Montreal, where the videogame industry is booming thanks to the talented people living in this area and also with help from the government.

3D Artist: *What training have you experienced – personally, professionally or educationally – that has led you to obtaining your position at Ubisoft?*
Guillaume Tiberghien: I graduated from a one-year 2D/3D animation program at ICARI (www.icari.com) in Montreal between 2002 and 2003. I learnt very diverse skills there, from 2D animation, After Effects and Flash to 3ds Max and Maya. I wasn't really used to computers back then, as I did my gaming on consoles. It was a lot to assimilate in a short period of time; I had to work extra hard in and out of school to stay up to date.

A

3DA: *The gaming concept arena seems extremely competitive. What key skills do you believe an artist needs to succeed as a 3D modeller in the industry?*
GT: From what I learnt, a state of mind and character – being easy-going, a team player, passionate about your work, open-minded and a hard worker – can be as important as having a fantastic portfolio. I think focusing on one aspect of creating in 3D, being skilled initially, is a good way of grabbing the interest of possible and future employers. Being active in forums helps as well, posting your work and comments, getting feedback and making contacts. It builds bridges with the 3D community at all levels.

3DA: *Can you reveal which key areas of the design process you contribute to?*
GT: Since modelling is at the initial stage of 3D design creation, I often have some liberty in the design, expressing my own imagination on what I feel the concept should look like. I have to present reference pictures showing what I think the model should look like and the natural evolution of my concept work. It's an organic process.

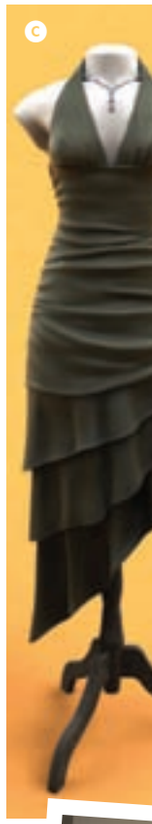
3DA: *What 3D software do you regularly apply in your projects, and to what effect?*
GT: ZBrush really changed the way I work and not really in the usual micro detailing way you would expect. In fact, I use the ZSpheres and the retopology tools, as they have redefined the way I model. These make my application much more spontaneous and less technical, which certainly suits my job title. Also, I can't say enough good things on how fast and efficient V-Ray renders are.

3DA: *Do you find time to be creative outside your role, and does this have an influence on your professional design?*
GT: When I'm a bit less busy, I love nothing more than to translate drawings that inspire me into 3D. It's a great exercise. There is so much to be learnt from 2D artists, after all.

3DA: Far Cry 2 *is a massive hit in the gaming community. Can you tell us how you contributed to this project and how much fun this was?*
GT: I worked on the *Far Cry 2* trailer of E3 in 2008. I modelled the boat and other minor visual elements. It was a very fun project but difficult, too. This was because the boat design changed so many times during the working process.

3DA: *What new projects do you have in the pipeline that you are excited about?*
GT: I'm pretty much back to small studies of anatomy

C



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Portfolio highlights

Guillaume has worked on some very well-known projects, including:

2009 'Assassin's Creed: Lineage' (three episodes)
2009 *The Final Destination* (matchmover)
2008 *Far Cry 2* trailer for E3
2008 *Tom Clancy's Rainbow Six: Vegas 2*
2008 *Lost: Via Domus* intro and outro
2007 *EndWar* UbiDays trailer

A *Bodyguard*, July 2009: Based on a drawing by Cuson, found at **http://cuson.deviantart.com/art/bodyguard-62355788/**

B *Pumpkin*, August 2009: Based on a drawing by Mathieu Reynès, found at **http://mathieureynes.blogspot.com/**

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> I think focusing on one aspect of creating in 3D, being skilled initially, is a good way of grabbing the interest of possible and future employers

for now. I would like to know the rules well to be able to break them properly, mastering the technique. I have to work on modelling real-world likeness – for example, sculpting a famous actor – which is something I do find challenging at times.

3DA: *Can you tell us a bit about some of your favourite personal works?*
GT: The *Space worker* image was a great challenge, but I started from such a great concept. There is a very strong shape to this composition, adding a great visual balance. Simple textures give it all the tangibility it needs and it obtains a very original and funny theme. It was a great learning experience – I even had to do a bit a research on Russian writing and the very nature of the monkey species with this brief.

3DA: *What would be your dream project and why?*
GT: A small, hard-working, passionate, talented and friendly team – with an abundance of creative freedom – to produce work with enough time to do the best quality possible.

C *Dress study*, May 2009: "My job is to model sets and props for videogame trailers and feature movies"

D *Space worker*, October 2009: Based on a drawing by Kai Spannuth, DPI-Graphics.com, found at **http://kai-s.deviantart.com/art/Space-Worker-with-robotic-suit-113744698/**

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+ The best courses and freshest talent from universities around the globe...

Brigham Young University – Center for Animation

Join this industry-renowned course for a great step onto the industry ladder

Brigham Young University is situated in Provo, Utah, in the United States of America. Currently ranked as the 71st top university in the whole of America, this university is doing great things, especially when it comes to animation. Unlike many other art schools, which typically focus entirely on art classes, the BYU Animation course also requires students to take all general education courses in addition to their major. The other benefit is that, despite being a private institution, BYU is extremely inexpensive in comparison to other art schools.

Within the animation school, teaching takes place in four buildings on campus. 55 Crabtree Building houses 28 workstations that are all loaded with the most up-to-date software, including Maya Unlimited, Studio Alias, RenderMan, Photoshop, Illustrator, Painter and Animo. This room is open 24 hours a day and includes two dual-screen machines with video and DVD recording. 75 Crabtree Building is the programme's virtual reality screening room, which is a 24-seat cinema. It can even screen 3D images with the use of 3D glasses and dual projectors.

R. Brent Adams, director of the Center for Animation says: "Each year, the seniors in the Animation major create a group animated short. In the six years we have been creating these animations, we have won nine Student Emmys granted by the Academy of Television Arts & Sciences and four Student Academy Awards given by the Academy of Motion Picture Arts and Sciences."

> "At BYU, we always strive for a strong and polished visual look. What's surprising is how much work it takes to achieve it"
>
> **Carson McKay** student at Brigham Young University

Many of the films created by the Brigham Young students have played at the Cannes Film Festival, the Annecy Animation Festival, the Sundance Film Festival and many others around the world.

Ed Catmull, president of both Pixar and Disney Animation Studios, says: "Over the years, Pixar has worked with a lot of different universities around the USA and hired people. One of the interesting things is that in the last few years, all of a sudden we found that BYU has risen to the top. BYU has an extraordinary programme here.

"It's amazing to suddenly see that BYU is producing the best in the industry," Catmull continues. "It's the perception, not just at Pixar but also at the other studios, that something pretty remarkable is happening here."

For more information about the Animation course at Brigham Young University, head to www.byu.edu.

Course details

Name BFA in Animation
Length Four years
Fees From $1,105 a term
ENTRY REQUIREMENTS
Complete the preapplication courses TMA 102 and VAAnim 160. Submit an application portfolio, including five to ten figure drawings, a sketchbook, a traditional animation sample and writing requirements

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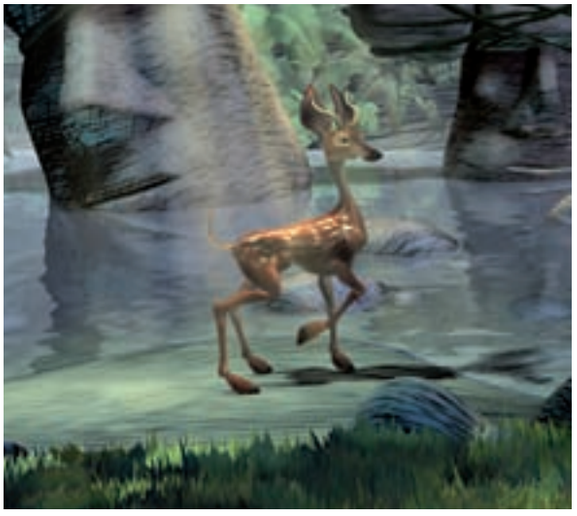

Ⓑ

Ⓐ Noggin

» **Directed by Alex Cannon** (currently at Universal)
Produced by Kamy Leach (currently at Digital Domain)
Time taken: 21 months
Maya, Photoshop, RenderMan, Final Cut
"'Noggin' is the animation that really caught the eyes of the big studios. Since part of the animation happens in good weather and part of it in the rain, all of the objects had to have two shaders. We also worked to give it an illustrated scientific field book feel."

Ⓑ Kites

» **Directed by Jed Henry** (currently illustrating children's books)
Produced by James Jackson (currently an intern at Pixar Animation)
Time taken: 19 months
Maya, Photoshop, RenderMan, Final Cut
"With 'Kites', we tried to get the viewer emotionally attached to the characters in just a few minutes. We wanted to create a soft, ethereal look with our sky scenes to contrast with the gritty city."

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C

D

C Las Pinatas
» **Directed by Thomas Leavitt** (currently at Blue Sky Studios)
Produced by Kamy Leach (currently at Digital Domain)
Time taken: 17 months
Maya, Photoshop, RenderMan, Final Cut
"The goal on 'Las Pinatas' was to have more polished animation than some of our previous films. We also wanted to push the design of the film, especially the environment."

D X-ing
» **Carson McKay**
Time taken: 21 months
Maya, Photoshop, Renderman, Final Cut
"With 'X-ing', we wanted to do something different. We ended up with a roadkill love story kind of different!"

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E

E Pajama Gladiator
» **Directed by Glenn Harmon** (currently at Sony Animation)
Produced by Ben Porter (currently at Pixar Animation)
Time taken: 22 months
Maya, Photoshop, RenderMan, Final Cut
"With 'Pajama Gladiator', we wanted to achieve an epic feeling with big action in a big arena. Our technical team developed a crowd simulator that filled the colosseum with over 10,000 screaming spectators."

> "We have won nine Student Emmys granted by the Academy of Television Arts & Sciences"
>
> **R. Brent Adams** director of the Center for Animation

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